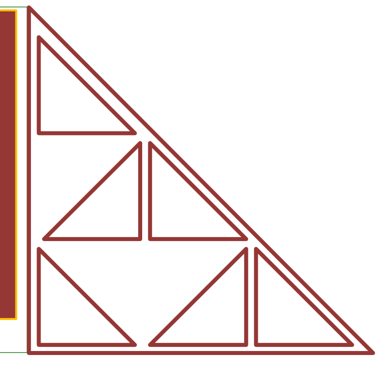
# Pharma presentation



Knowledge , Skills , attitude






## Skills

- Selling skills : from the selling skills verbal are the following ( Rapport , Probing & Question F&B, or selling point, Cross sales , Up sales, active listening , persuading & influencing the customers, objection& handling the objection, buying signals , consultation selling, customer focused ,customer networking , types of customer ,.....
- Merchandizing
- Customer care
- Communication
- Social style (selling by versatility )






## Skills

- OTC. Guide line
- Counter & counter cases management
- Skills depend on the knowledge as history , diagnosis , lines of treatment






## Knowledge

- **Product knowledge** : trade name , dosage form & conc. , Frequency of the dose, quantity of the dose , main use & side effect, generic N.
- **Counseling with the drugs**
- **Feature & selling point in the products**
- **The classification & its importance :**
- **Cases** : history , counter diagnosis , lines of treatment , patient education , closing






- **The classification importance** :2 main point are :
- Through the classification know the main use
- Problem solving as the following

1. To change to other drug when the 1st one is not effective
2. To give combination






## Knowledge

1. As problem solving for allergy
2. To overcome the other side effect
3. To decrease the need for maximum dose






- **Official frequency of the dose** :

1. To be **professional consultant** by specific knowledge
2. Also help in problem solving **& customer** service (not able to take 3 time daily ) , children in night ), **Seasonal OTC**
3. Considered as one of (F.B.T) or selling point which help in the **persuading** ,






## Knowledge

1. To be official in the prescribing specially for **hesitated & analytical customer**
2. Help  patient to **become more compliance**
3. To overcome the problem of **over dose** specially in the **narrow therapeutic index drugs**

**side effect :** remember  patient education , C.S.  , problem solving & also sales






# I-Anti infection

- Antibiotics & optimum dose for children
- Sulphonamide
- Ant mycobacterium
- Anti viral systemic &topical
- Antifungal systemic & topical
- Anthelmintic & antiprotrazoal






## Antibiotic class

According to the **mechanism of action** can be classified the antibiotic to the following :

- Inhibition of cell wall synthesis
  B-lactams (penicillin , cephalosporin , carbapenems ,monobactams )

  Non B- lactams as the following

  Fosfomycin as Monurol,

  Glycopeptide as vancomycin






## Antibiotic class

- Polypeptide antibiotic as bacitracin topically used
- Cycloserine antibiotic it is secondary drug for tuberculosis
- Also inhibition of cell membrane as polymyxin, also other antibacterial as group has antifungal effect as amphotericin , imidazole , nystatin, …






- **Inhibition of DNA synthesis** as following

DNA gyrase inhibitor as Quinolone , Rifambicin

Folate or Competitive antagonist as Dihydroperfolate synsetase inhibitor Ex. sulphonamide (folate antagonist )

Dihydrofolate reductase inhibitor Ex. trimethoprim (folate antagonist ) there fore the combination of sulphonamide and trimethoprime lead to bactericidal effect .






- **Inhibition of protein synthesis** where inhibit bacterial ribosome through binding the activity at

30s subunit reversible binding ex. Tetracycline Bacteriostatic effect

30s subunit irreversible binding ex. Aminoglycoside. Bactericidal effect






50s subunit reversible binding ex. Chloramphenicol (bacteriostatic effect )

50s subunit irreversible binding ex. Macrolide & clindamycin ( bactericidal effect )






## Antibiotic class

- Penicillin & beta lactam group
- Cephalosporin group ($1^{st}$ ,$2^{nd}$ ,$3^{rd}$ ,$4^{th}$ , $5^{th}$ ,… )
- Tetracycline group
- Quinolone group
- Macrolide group
- Lincosamide group
- Amino glycoside group
- Other antibiotic ( glycopeptides antibiotic )






# Antibiotic class

- Combination of antibiotic with sulphonamide & other
- In the different classes we will discus the following : as **FBT** or **selling point**

1. Spectrum
2. Frequency of the dose as (official frequency, sales point or F.B.T)
3. Taste for antibiotic syp. As selling point or F.B.T.






4. The main side effect & cross sensitivity as customer services , & problem solving & sales
5. Counseling during dispensing or prescribing of the antibiotic where it is necessary in some type






# I – **Penicillin**

- Penicillin is narrow spectrum gm +ve *
- Penicillin injection not taken orally where will be destructed by stomach juice
- Frequency ; there are different  types :

1. Short acting penicillin as **penicillin G sodium** 1*3






## Penicillin & beta lactam group

1. Intermediate acting as penicillin procaine 1*2
2. Long acting penicillin (Benthazine penicillin ) 1200000 : according to the case may be 1*month, 1*21 day , 1*15 d

- The main side effect is **anaphylactic shock**
- There are cross sensitivity between all members of beta lactam group & cephalosporin group






- The **2nd type is (penicillin V )** the product is phenoxy methyl penicillin it is orally penicillin where not affected by stomach juice as ospen
- **Ospen narrow spectrum +ve**
- Frequency of the dose is 1*3 or 1*4  short where it is  duration of action






- Example for long acting penicillin (benthacin penicillin ) are retarpen & durapen
- Example for oral penicillin is ospen
- **II- Ampicillin** :
- Spectrum is broad spectrum
- Frequency of the dose is short duration 1*3
- Safe in the pregnant
- The main side effect is diarrhea






## Penicillin betalactam group

- May be severe diarrhea due to psedomembrenous colitis
- Ampicillin combination as ampiclox (Ampicillin + Cloxacillin
- **III- Amoxycillin** :
- The spectrum is broad spectrum
- Amoxicillin is more absorbable than Ampicillin therefore it is rapid onset of action & less S.E.






- Therefore amoxicillin is more suitable for hepatic patient but vice versa in Ampicillin therefore Ampicillin is suitable for kidney problem * هذة المعلومة تحتاج الي مراجعة
- **Amoxicillin combination :** clavulonic A. has bitter taste
- Amoxicillin & Clavulonic acid as augmentin
- Spectrum is broad spectrum
- Clavulonic acid has synergism effect due to betalactamse inhibitor role, no antibac. effect



# Penicillin betalactam group

- Frequency of the dose as the following :
- Conc. 100 , 125 , 250 , 500 mg , is 1*3
- Conc. 200 , 400 , 875 mg , is 1* 2 this is sales point in the product , C.S. & problem solving & patient more compliance
- It is first choice in the pregnant
- The main side effect is the diarrhea
- Amoxicillin more secreted through kidney but Ampicillin more secreted through G.I.T




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# Penicillin betalactam group

- Amoxiclave  is highly effective
- It is drug of choice in tonsillitis
- Frequency of the dose as the following :
- Conc. 62.5 , 156 , 312, 375 , 625 mg is 1*3
- Conc. 228 , 457, 600 ES , 1 gm & 1gm ES sales point , more C.S. , more problem solving , patient more compliance
- The conc. 600 SR depend on more high conc. Of amoxicillin




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- But the same conc. Of clavulonic acid this lead to high effect but less side effect
- The main side effect of amoxiclave  is diarrhea
- **V- Other B. lactam antibiotic also called broad spectrum & antipsedomonal penicillin** (carbinocillin,pipercillin,…. ) these drugs has beta lactamase inhibitor effect ,  wide range gm. –ve effect & effect on pseudomonas m. o , examples for these antibiotics are ( Azactam, Tienam , pepril , ) & Azetreonam

# Cephalosporin group

- **VI- Cephalosporin group** :
- There is cross sensitivity with Penicillin .&beta. Lactam group
- Spectrum is broad spectrum but :
- $1^{st}$ & $2^{nd}$ generation has more effect on gm. +ve m. O also $1^{st}$ generation considered as anti staphylococcal drugs due to effect on staphylococcus &**penicillinase producing staphylococci**

$3^{rd}$ generation has more effect on gm –ve m.o

## Cephalosporin

- $4^{th}$ generation has high effect on gm-ve & gm +ve m. O it is considered (extended spectrum )
- Diarrhea is the main side effect but
- $1^{st}$ & $2^{nd}$ generation are high S. E (diarrhea )
- $2^{nd}$ & $3^{rd}$ generation are very low S.E. (diarrhea
- Also $3^{rd}$ &$4^{th}$ generation cross the blood brain barrier therefore it is one of drug of choice for meningitis, also only cefuroxime of $2^{nd}$ generation






## Cepalosporin

- 1st generation as cephradine as velosef , cephalaxin as cephalax , & frequency of the dose of them is 1*3
- And Cephadroxil as cephadrox & F. of the dose is 1*2 as sales point with its different rational
- 2nd generation as Cefuroxime Ex. Zinnate , … & cefprozil ex. Cefzil or cefproz , & F. of the dose of the last 2 drugs are 1*2






- And cefaclor as ceclor or tabiclor ; the F. of the dose of cefaclor according to the conc. as the following :
- Cefaclor 125 , 250 , 500 mg is 1*3 but
- Cefaclor 375 suspension or 750mg is 1*2 also selling point in the products






## Cepalosporin

- An other selling point in the Cefaclor products is acceptable taste where it is by strawberry taste
- **3rd generation** as cefexime ex. Suprax N.B, in children the dose of cefixime equal the weight of cefixime multiply 0 .4 . Other drugs of 3rd generation as cefdinir ex. Omenicef & the F. of the dose is total calculated dose dose once /day or total dose divided to twice day






## Cephalosporin

- Also 3rd generation as cefpodoxime ex. Cefodox & cefditrone ex. Miact & F. of the dose of these drugs are twice /day
- 4th generation as cefopime & all products are injection
- **Remember that** the frequency of the dose & taste is selling point apply in the persuading , problem solving , C.S. , & more compliance patient ,






# Cephalosporin

- 4$^{th}$ generation of cephalosporin is cefopime
- 5$^{th}$ generation of cephalosporin ceftaroline as fosamil
- **They are wide therapeutic index** where can ranged from 50 mg to 100 mg / kg /day






# * إستكمال هذة الشريحة  Selling point .بأنواع متعددة

- From suspension  products have acceptable taste as selling point  are ceclor , omnicef , augmentin , zithromax, ………………………….   but zinnate not acceptable  need to shacking for long time to decrease it
- From products has frequency of the dose as selling point are all products its frequency once or twice ex. Cefixime , omnecif , doxycycline ,  but once daily only as azithromycin , klacid Xl




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- This is broad spectrum bacteriostatic , also active against **mycoplasma** , richettsia , spirochaetes , **aerobic & anaerobic M.o**
- **Two main drugs** are available the first one tetracycline ex. Tetracycline cap. Its F. of the dose is 1*3 or 1*4
- The 2nd drug is doxycycline Ex. Vibramycin cap.& its F. of the dose is 1*2 as in traveler diarrhea but other frequency has 2 regimen






## Tetracycline group

- $1^{st}$ regimen for acne loading dose 2 capsules together $1^{st}$ dose then 1cap. Daily for month
- $2^{nd}$ regimen for treatment of trachoma also loading dose 2 cap. $1^{st}$ dose then one cap. Daily for 14 day
- **The main side effect** : GIT up set (irritation of the stomach , Nausea ,… ) , precipitated in the bone lead to bone discoloration(yellow bone ),
- Vestibular disturbance ( dizziness ) ,Nephrotoxicity , hepatotoxicity





Also photosensitivity , & decrease the absorption of other drugs when take together

- **Precaution & counseling before prescribing** or dispending the tetracycline group

1. Take with large amount of water
2. Not take with high calcium containing products as milk & milk products
3. Not take with other drugs specially Ca., iron ,






And plain antacids where make complex with these drugs & decrease its absorption

4- Avoid sun exposure or use sun screen due to photosensitivity effect

5-Not prescribe for age less than 12 year where precipitate in bone & lead to yellow teeth

- **Contra indication** : children less than 12 year , pregnant , kidney & liver failure






## Quinolone group

- The nucleus of Quinolone group is nalidexic acid which is safe in the pregnant but
- Quinolone as antibiotic is fluorinated analogs of nalidexic acid & not safe in the pregnant
- it is very effective against gm – ve cocci , bacilli & Pseudomonas aeruginosa
- but developed fluoroquinolone has effect on gm +ve, gm –ve m.o , also effect on






## Quinolone group

- mycoplasma , richetssia mycobacterium & Plasmodium falciparum , but less effective on streptococci & staphylococci
- Some members of quinolone effective on Chlamydia trachomatis as ofloxacin, …….
- 4th generation act on Top isomeraze lead to less resistance






# Quinolone group

- **Fluroquinolone** has liver enzyme inhibitor effect lead to decrease hepatic drug metabolism lead to increase the conc. of the drug in the plasma as **theophyline**






## Quinolone group

- **Main side effect of quinolone** : *Nausea , vomiting , diarrhea , ***headache** , dizziness , ***insomnia** ,* Skin rash ( photosensitivity ) , **tendinitis**
- New generation lead to **arrhythmia** due to prolongation of Q.T. interval
- N.B the photosensitivity is less in 3rd & 4th generation
- Epilepsy attack increase with NSAIDs & old Quinolone

# Quinolone group

- But the epilepsy attack less affected with 3rd & 4th generation
- New generation lead to **arrhythmia** due to prolongation of Q.T. interval
- Precaution during prescribing or dispending of quinolone group :

1. Take with large amount of water






## Quinolone

1. Not take with high calcium containing products as milk & milk products
2. Not take with other drugs specially Ca., iron ,

and plain antacids where make complex with these drugs & decrease its absorption

4- Avoid sun exposure or advice by use sun screen due to photosensitivity effect

5-Not prescribe for age less than 18 year due to articular erosion



## Quinolone

- Avoid prescribing **Quinolone & ant epilepsy** & **NSAIDs** with each other where increase episode specially 1st & 2nd generation
- Also avoid prescribing for **age above 70 year** *
- **Contraindication** :age less than 18 year , pregnant , hepatic & kidney failure , Fauvism ,
- But must be remember that quinolone excreted mainly through the urine this give chance to be used in liver للبحث






## Quinolone

- **Quinolone drugs classified to**
- 1st is nalidexic acid ( nalgram ) narrow spectrum Gm –ve & mainly on urinary tract infection , short duration of action 1*3
- 2nd generation Gm-ve more effective as norfloxacin ex. Noroxin, & ofloxacin ex. Tarvid
- & the frequency of the dose is 1*2
- 






# Quinolone

- Also 2nd generation as ciprofloxacin ex. Ciprobay , & enoxacin ex.penetrex 400,200 mg & the frequency of the dose is 1*2
- 3rd gen. as Lomefloxacin ex. Lomax gemifloxacin ( Factive ) , Levofloxacin(Tavanic ) , Levox
- 4th gen. Moxifloxacin ex. Avalox , Maxima
- the frequency of the dose of 3rd & 4th is once /day, also highly effective gm + ve cocci






## Quinolone

- ( streptococcus pneumonia ) , also has activity against anaerobic there fore highly effective in chronic bronchitis & sinusitis
- **The main application of quinolone** as following :
- Sinusitis, otitis media , chronic bronchitis, & chronic bronchopneumonia , meningococcal inf., anal abscess , gonorrhea , brucella , trachoma , conjunctivitis due to pseudomonas Enteritis , urinary tract infection



## Macrolide

- **Selling point**
- More active against +ve M.o* anaerobic M.o البحث,
- Has effect on Atypical M.O* mycoplasma,chlamedia, also pseudomonas, there fore it is the drug of choice in mycoplasma respiratory infection, campylobacter gastroenteritis ( diarrhea in children ) , diphtheria, **pyogenic skin infection**
- Due to last effect & no cross sensitivity with



# Macrolide

- penicillin so it is good alternative to penicillin & betalactam group
- It has effect on **Haemofillus** but the

azithromycin is the better in this effect also azithromycin has short course 3 day regimen ,single daily dose & still in tissue for 7 day

- Macrolide effective on **toxoplasmosis** during pregnancy specially spiramycin then josamycin
- Macrolide effective on H.pylori





- **Bactericidal at normal & high dose** but bacterostatic at low dose ( dose dependent )
- Have competitive inhibition for liver enzyme i.e decrease the drugs metabolism lead to increase the drugs plasma conc.
- But Azithromycin & Clarithromycin are less one in liver inhibiting enzyme & erythromycin is the highest one
- Clarithromycin bioavailability less affected by food

## Macrolide

- **Also** azithromycin & erythromycin used in treatment of **cervical chlamydial infection** during preg., azithromycin can used one shout
- **The main side effect** is mild gastric upset & diarrhea ,disturbance in **taste & smell** , Ch. Ju. the s. Effect decrease with new products & azithromycin & clarithromycin are less s. Effect






- **Macrolide should avoided with jaundice**
- NB . New Research on Azithromycin may be has an **arrhythmia**
- Macrolide drugs as :
- Erythrocin ex. Erythrodar F. of dose is 1*3 or 1*4 , Clarithromycin ex. Klacid 1*2 & xl once /day , Azithromycin 1*1 , roxitheromycin 1*2

, spiramycin & josamycin ex. Josaxin 2*2






## Macrolide

- **Azithromycin dosage form & concentration**
- Cap. 250 mg 6 cap. 2 cap. Once daily before meal or after meal by 2 hours
- Tab. 500 mg ex. Azimak  one tab. Daily not related to meal ( sales point )
- Zithromax cap. 250mg 4 cap. Take as one shout dose in case of gonorrhea
- Suspension : this dosage form has different volume but by the same concentration



## Macrolide

- **Different volume of azithromycin** to be suitable for different age & weight as the following :
- 15 ml suitable till 20 kg & the dose 5 ml/day
- 22.5 ml suitable till 30kg, the dose 7.5 ml/day
- 30 ml suitable till 40 kg , the dose 10ml/day
- **The conc. Is 40 mg /1ml**
- Weight divided on 4 give the dose per ml for any age or any weight in children




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## Lincosamide group

- **Selling point or feature**
- Clendamycin also more effective on gm +ve , **penicillin resistant** & some anaerobic m.o
- No cross sensitivity with penicillin
- Short duration of action therefore the **preferable F. of the dose is 1*3** but practically double dose quantity & twice frequency
- **The main side effect** is diarrhea may be severe diarrhea due to pseudo membranous colitis



- **Clendamycin dosage form & conc.**
- Cap. 150mg , 300 mg ex. Dalacin cap.
- Solution 1% suitable for oily skin
- Lotion 1% suitable for dry skin
- Gel 1% suitable for all type of skin
- Vaginal cream 2% local antibacterial effect
- It is suitable for skin infection , soft tissue as dental infection , acne problem , ….






## Amino glycoside

- All oral product of amino glycoside not absorbed therefore it has local effect only except neomycin has some systemic effect
- Neomycin used in hepatic comma (hepatic encephalopathy) with lactulose
- The dosage form in the pharmacy are drops & creams or oint
- It has bactericidal effect with more effect on gm –ve m.o (GIT & U.T infection )






# Amino glycoside

- It has synergism effect with beta lactam group
- Its systemic effect through injection dosage form as gentamycin , streptomycin injection
- Streptomycin considered the 2nd line of treatment of T.B
- **The main side effect** of amino glycoside are :

Nephro toxicity , oto toxicity , & neuromuscular blokade ( paralysis of muscle )

Dose is 5mg /kg /day divided into 2 dose






## Chloramphenicol& aminoglycoside

Nephro toxicity , oto toxicity , & neuromuscular blokade ( paralysis of muscle )

Dose is 5mg /kg /day divided into 2 dose

**Chloramphenicol** :

- Spectrum : it is broad spectrum, bacteriostatic,
- The drugs as chloramphenicol & thiophenicol
- The drug of choice in treatment of typhoid






# Chloramphenicol

- Chloramphenicol drops stimulate optic nerve
- **The main side effect** are bone marrow depression , bleeding , optic nerve atrophy , high dose in children lead to gray syndrome*,
- **Contra indicated** in newborn due to gray syndrome due to glucouronyltransferase def.






# Quantity of the dose of anti biotic

- Equation for weight calculation till 10 year old
- Amoxicillin 25 – 50 mg /kg / day
- Amoxicillin + clavulanic A. 25 – 50 mg /kg/day
- Amoxicillin + Clavulanic A ES 50 – 90 mg/kg/d
- Cephalexin 25 – 50 mg /kg/day
- Cefadroxil 25 – 50 mg /kg/day
- Cefaclor 20 – 40 mg /kg/day
- Cefuroxime 20 – 40 mg /kg/day
- Cefprozil 20 – 40 mg /kg/day





# Quantity of the dose of anti biotic & anti infection

- Cefpodoxime 10 – 12 mg /kg/day
- Cefdinir 8 – 14 mg /Kg/day
- Cefxime 8 mg /kg /day
- Clarithromycin 15 mg /kg /day
- Azithromycin 10 – 20 mg /kg / kg/day
- Spiramycin 100000 - 150000 IU may to 300 thousand divided into 2 dose for 5 day
- Roxitheromycin 5-8 mg/kg/day divided 2 dose
- Clendamycin 8 – 14mg /kg/day





## Quantity of the dose of anti biotic & anti infection

- Sulphamethoxazole 20 – 30mg/kg/day
- Trimethoprime 6 mg /kg /day
- Acyclovir 10mg /kg/dose for 7-10 day
- Amantadine 100 – 400 mg /day for adult but for children 5- 10 mg /kg/day in 2 dose not exceed 200 mg daily
- A Lamivudine 3 mg /kg /day for child
- Lamivudine 100 mg – 300 mg for adult
- Adevofir 10 mg / day

## Quantity of the dose of other anti infection

- Chloroquine 8 mg /kg/dose
- Mefloquine 20 – 25mg/kg/dose
- Fluconazole 100 mg /day but till maximum dose 800 mg/daily for adult but for children 3- 6 mg / kg/day
- Fluconazole syp. 25 mg / 5 ml
- Itraconazole 100 mg / daily but till maximum dose 400 mg / daily






## Quantity of the dose of other anti infection

- Ketoconazole 100 – 400 / daily
- Nystatin 100.000 unit /dose = 1ml = one dropper every 6 hour but for infant can use ½ d.
- Miconazole 30mg /dose every 6 h. for infant

  60mg / dose every 6 h. for children for 7- 10 day

Miconazole 2% oral gel = 120 mg /spoon

- Griseofulvin 10 mg /kg/day
- Griseofulvin suspension 125 mg/5 ml

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## Quantity of the dose of other anti infection

- Metronidazole 25 – 50 mg /kg/day divided in 3 equal dose or( 8- 16 mg/dose ) & according the severity of problem & type of parasite where giardia need to minimum dose
- Metronidazole susp. 125 ,250 , 200 mg /5ml
- Tinidazole 30 - 50 mg /kg /day as single dose available in tab. 500mg per tab. Practically one tab. For each 15 kg






## Quantity of the dose of other anti infection

- Secnidazole ( flagentyl 500mg/ tab. ) as tinidazole
- Drugs effect on nematodes
- Mebendazole 100 mg /dose twice daily 3 day is the same for all ages available in 100 mg / 5 ml but tab. 100 mg *
- Albendazole 100 mg /dose one shout or twice* but 200 mg for adult
- Flubendazole as mebendazole






- **Pain definition** : is unpleasant sensation due to the tissue damage or inflammation process , where the prostaglandin E2 is thought to sensitize nerve ending to the action of bradykinin , histamine & other chemical mediator which also released locally by inflamatory process & damage of the tissue there are different type of pain as the following






- **Breakthrough pain** ; mostly intermittent ,

transitory increase in pain that occur at **greater intensity** ( certain type of tooth pain ) , certain type of renal pain, birth pain , broken bone ...

- **Acute pain** ; this may be last for 30 day or more ( **but days** ) & occur after muscle strains , tissue injury as trauma or surgery , this type is usually self- limited , & Decrease with time where the injury will heal,






- **Chronic pain** ; it is **persistent** or episodic of duration or intensity or may define it as lasting more than 6 month (**several months** ) ex. Osteoarthritis , rheumatoid arthritis , degenerative disorder with age ,
- **Neuropathic pain** it is progressive peripheral neuropathy ,progressive nerve degeneration , it is described as **burning** , **shooting** , **stinging** , **throbbing** , **tenderness** of the skin






- **Idea about the NSAIDs effect & action** :
- Cell wall (cell membrane ) which contain phospholipids سهم gives arachidonic acid on which occur 2 pathways :
- **1st is cyclooxygenase pathway** (cox )
- **2nd is lipoxygenase pathway** (lox or lipox )
- Cox pathway ; Arachidonic acid سهم by cyclooxygenase 1 سهم gives the (prostaglandin , thromboxan ,& prostacycline ) are synthesized

- Via cyclooxygenase pathway & remember that there are 2 related isoform of cyclooxygenase enzymes are cyclooxygenase 1 (cox 1 ) & cyclooxygenase 2 (cox 2 ),
- Where cyclooxygenase 1 is responsible for cytoprotective (house keeping ) i.e lead to synthesis to prostanoids which protect gastric mucosa , vascular homeostasis , platelet aggregation , & kidney function ,






- **But cyclooxygenase 2 (cox2 )** produce prostaglandins responsible for the pain & inflammation there for cox1 inhibitor drugs **has less safety on the stomach** & less suitable for **chronic pain**
- but cox2 inhibitor drugs is more safe on the stomach & more suitable for chronic pain
- **But leflunomide** capturing or binding with excess of **TNF alfa** ( one of domnina nt






- cytokines ) or proteins that play important Role in response as in rheumatoid arthritis there fore it used in rheumatoid arthritis
- **But 2nd lipoxgenase pathway (lipox )** cell membrane phospholipids سهم gives arachidonic acid by 5- lipoxygenase سهم gives leukotrienes
- N.B there are thought that when inhibit the cox pathway lead to increase the lipox pathway i.e increase in Leukotriene synthesis

# NSAIDs & Pain management

Tissue injury
Phospholipids
Arachidonic acid

Leukotrienes
- Bronchoconstriction

**Inhibitors**
- NSAIDS (non–COX-2)
- Aspirin

**COX-1**
(Constitutional)

**Inducers**
- Cytokines
- Growth factors

**COX-2**
(Inducible)

**Inhibitors**
- COX-2 inhibitors
- NSAIDS (non–COX-2)
- Aspirin

Cytoprotective prostaglandins
- Protect gastric mucosa
- Aid platelet aggregation

Inflammatory prostaglandins
- Recruit inflammatory cells
- Sensitize skin pain receptors
- Regulate hypothalamic temperature control

- **Classification of NSAIDs**. According to the arachidonic acid & cox pathway it classified to

1. Non selective
2. Semi selective or preferential
3. Selective CoxII. Inhibitors
4. **Other classification depend on the original source** ( on the counter for alternative )

(Propionic acid , Acetic acid , fenamates ,






# II- Analgesic anti-inflammatory & other specific drugs

- , hetero aryl acetic acid , oxicam & coxibe , )
- Frequency of dose
- Maximum dose of NSAID
- Paracetamol
- ASA
- Tenoxicam 10/1 coxII/CoxI للبحث
- Lornoxicam , peroxicam 6/1 CoxII/CoxI للبحث
- Diclofenac has the same mechanism of corticosteroids in anti inflammatory effect & asthma للبحث

- **From therapeutic effects & selling point of NSAIDs :**
- Analgesic effect where it inhibit the prostaglandin E2 synthesis which stimulate the nerve ending to the inflammatory mediator (bradykinin, histamine , …) & lead to feel by pain
- Antipyretic except **diflunisal** (dolobid ) where not cross the blood brain barrier
- Anti inflammatory except paracetamol



## Therapeutic effects & sales point of NSAIDs

- Remember that the anti inflammatory effect but need to high dose & long time than antipyretic & analgesic effect
- Ibuprofen till 1200mg/day has good analgesic & antipyretic effect but anti-inflammatory effect more than till 2400 mg or 3200 mg /day
- Aspirin is dose dependent & high side effect on stomach
- Ibuprofen as one of non selective group may






# Therapeutic effects & sales point of NSAIDs

considered as the less one effect on the stomach

- More selective cox 2 drugs does not inhibit cox1 سهم does not inhibit platelets aggregation & not increase the bleeding time ( pain with wound , or pain with surgy , … )
- All NSAIDs are time dependent reversible effect on platelets aggregation except ASA, where ASA lead to **acetylation irreversible cyclooxygenase inhibitor** there fore it is used for hypertensive patient

## Therapeutic effects & sales point of NSAIDs

- & after 40 year as heart protective to prevent blood clotting problem & used once daily
- Some molecules has analgesic & anti inflammatory effect by the same level ( diclofenac & indomethacin )but other may be preferable as analgesic effect
- Salt has effect on the choice of NSAID (diclofenac Na & diclofenac K )
- Dosage form has effect on the choice of NSAID






# Therapeutic effects & sales point of NSAIDs

- Ibuprofen is only one of NSAIDs compatible with breast feeding
- Naproxen is the safest one of NSAID in the cardiovascular problem
- **Mefenamic acid** containing drugs are the best choice in **menorrhagia & dysmenorrhea** pain
- Mefenamic A & danazole leading to reduce estrogen mediated cyclooxygenase activity






# Therapeutic effects & sales point of NSAIDs

- Also mefenamic acid increase endometrial PG metabolism (PGF2alpha which increase the contraction ), & ( PGE which increase the vasodilation ) ,
- But also **mefenamic acid block PG receptor in uterine tissue**
- In selective cox II Etrocoxibe ( 60mg , 90 mg , 120mg , ) in gouty pain conc. 120 is preferable & other conc. In Rheumatoid & osteoarthritis






## Therapeutic effects & sales point of NSAIDs

- Some members as naproxen , celecoxib , Etoricoxibe , oxicam , leflunomide , less frequently may be once / day
- Divido sales point
- Topical NSAIDs patches
- Azapropozan ( prolixan ) is the best one has uricosouric effect
- All do not cause tolerance
- All do not cause dependence






## Quantity of the dose analgesic & antipyretic (optimum )

- Paracetamole 10 – 15 mg /kg/dose
- Ibuprofen 7 – 10 or 15 mg /kg/dose
- Or ibuprofen 20 – 30 mg / kg / day in divided dose
- ASA 10 mg/kg/dose
- Mefenamic A. 5 mg /kg /dose
- Diclofenac 0.5 – 1.0 mg /kg/dose or 2 - 2.5 mg/kg /day
-






## Precaution during prescribing the NSAID

- Asthmatic patient
- Un controlled hypertensive patient
- Peptic ulcer
- Pregnancy & breast feeding
- Blood bleeding
- Liver problem & kidney problem& chronic renal insufficiency
- with warfarin






## Precaution during prescribing the NSAID

- Cross sensitivity with sulphonamide ( selective coxII ) specially celecoxibe
- Risk of cardiovascular problem , edema ( selective cox II)
- Carful use of other NSAIDs than ibuprofen & parecetamol for children






- **Specific ant rheumatic drugs** (active rheumatoid arthritis , active psoriatic arthritis
- **Specific drugs for articular degeneration , osteoarthritis (**generally it help the regeneration of the cartilage , & maintain the synovial fluid in joint & prevent progression of osteoarthritis
- Joint caremax ( 1+1 *1 ) … (Omega 3 + glucosamine sulphate ), Dorofen (gincobiloba + glucosamine ) 1* 3 /day for 4 week & maintenance dose twice / day




T&D
Know To Glow
TRAINING AND DEVELOPMENT DEPARTMENT

- Other drugs as glucosamine plus
- Chondritin
- Avocadoextract (piascldin )
- MSM
- Omega 3
- Gincobiluba
- Main S.E of dorofen : Mild may be heartburn, GIT upset , headache ,
- Glucosamine sulphate 1200 mg take once

- **Osteoarthritis** : chronic inflammation of joint affect the cartilage ( pad between bone ) & synovial fluid ( lubricant ) it may be **primary** associated with aging but **secondary** develop early in life after specific cause ( trauma, injury , or obesity )
- Counter difference between the Articular degeneration & Rheumatoid arthritis
- Muscle relaxant drugs
- Gout & hyperuricemia drugs

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- Precipitation of uric acid in the joint specially peripheral joint , **increase in big toe joint** , knee & ankle joint , when the uric A. increase than the normal level lead to acute then chronic stage
- 1st drug Colchicine (colmedetene ) 0.5mg or 0.6mg treat gout attack (flare ) , used in acute stage of gout , interferes with inflammatory process , (as anti inflammatory drug )






- **Frequency of the dose** is generally 1*3
- **Quantity of the dose** is loading dose 1 to 1.2 mg then 0.5 mg to 0.6 mg every 6 hour or till side effect ( diarrhea ) appear , or till response or till maximum dose as course 6 to 10 mg then stop & can repeat an other course after 3 day ,
- **The S.E of colchicine** when increase the dose is diarrhea & bloody diarrhea , alopecia






- **Other use for colchicine** is Mediterranean sea fever where it decrease the certain protein production ( amyloid ) responsible for the pain
- 2nd dug is allopurinol (Xanthine oxidase inhibiting drugs ) inhibit uric A. synthesis not used in acute stage
- As no uric , purol , zyloric conc. 100, 300
- Frequency of the dose according to the severity , must add colchicine in first doses






- Mild & moderate case begin by low conc. (100mg ) once per day & increase gradually every week till 200 to 300 mg / day
- The maximum dose is 800mg to 900 mg /day
- **The main S.E** are G.I.T up set **, Alopecia**, **Cataract** , **bone marrow depression**
- 3rd drug is uricoseric agent ; dugs inhibit reabsorption of uric acid & this lead to increase its excretion






## Gout dugs

- Uricoseric agent as Propancid , urolyte U. , Urosolvin , peprazine in coliurinal , jedcourine , herbal product as **parsley** , & الحنظل
- **Patient education with gout** : High fluid intake 2-3 liter /day to prevent kidney stone , Avoid high purine diet ( Red meat ,Milk & milk products, bean & its products ,.... ) avoid xanthine containing products ( red tea , Pepsi , coffee , precaution with using some drugs as diuretic , ACEI,

# Gout drugs

- Theophylline , ampicillin , aspirin in normal analgesic & antipyretic dose , methotrexate ,trental (pentoxyphylline )..
- N.B coli urinal & other eff. Containing hexamine with sulphonamide increase the risk of kidney stone precipitation
- Immuran  & allopurinol dugs inter action






## Antiprotozoal

- Anti malarial drugs
- Amoabiasis (encysted & vegetative form )
- Trichomoniasis (Trichomonus Vaginalis)
- Giardiasis (Giardia)
- Toxoplasmosis (Need Victor) as Cat
- Leshmaniasis (Leshmania) affected by Pentostan injection
- Sleeping sickness the victor is tse – tse affected by suramin injection



- Malaria ( plasmodium malaria & other plasmodium )
- The main antimalarial drugs
  - Chloroquine Sulfate ( Roschin  & chloroquin )
  - Mefloquine    **Mefaquine**
  - Pyrimethamine+Sulphadoxin **Fansidar**
- *Dose*: ( prophylactic & specific )
- Counseling with the drug dispensing or presc.
- ***For prophylactic:***






- Difference between Malaria & Danke fever
- **Malaria**
- Protozoal infection
- Victor mosquito
- Specific fever ( intermittent differ according to type of plasmodium )
- Coldness
- Tremors or shivering
- Sweating



# Antiprotozoal

- **Dangue fever**
- Viral infection
- Continuous fever
- Victor different & anopheles mosquitos
- Antipyretic must be paracetamol only where other NSAIDs increase the risk of blood bleeding specially aspirin
- Immune stimulant & fluids






- Metronidazole
- **Flagyl**
- **Flazol**
- **Amrizole**

➢ Metronidazole:

- Effective on Fagitative more than Cystic
- Metronidazole Combination

➢ Diloxanide:

- Effective on Cystic more than Fagitative





- ***Dose***:

  One tablet Three times Daily .(1*3)

  For Short Time (7-10 Days)

  For Children (20-30 mg/kg/day)

- ***Side effect:***

- Metalic Taste.
- Dark urine.
- G.I.T upset.
- Disulfuram Reaction.





- **Tinidazol** ( Fasgin , Protagen )
- **Dose:**
  - Four tablets Once Daily .(4*1)
  - For Short Time (3 Days)
  - For Children: (One tablet/16kg/day)
- Side effect as metronidazole but less in severity
- **Secondazole** ( secanid )






## Anthelmintic drugs

- The last Anthelmintic drugs effect on nematodes parasite ( mostly round worm )
- The more common nematodes are : ascaris ankylostoma(hook worm ), enterobus vermicularis oxyuris (pinworm), trichuris , strongyloides , eye worm (Loa) S/c filariasis ,

Bacerofti ( Lymphatic filariasis ) elaphantiasis






- In all drugs oxyuris can be treated using signle dose
- Albendazole & flubendazole can effect aganist cestodes ( tapeworm ) but not common use






- Mebendazole ( Vermox , Protazol )

➤ <u>Dose:</u>

- (1*2 OR 2*1) for three days Repeat after 2 weeks

- Albendazole ( Albenda )

➤ <u>Dose:</u>

- One Shot Repeat after 2 weeks

- **Patient education**






# Anthelmintic

- Mebendazole & albendazole has effect on giardia & cystodes but not 1$^{st}$ choice
- **In giardia take one dose daily for 5 days**
- **Side effect** : **Headache** , dizziness , fever , **vomiting** , **temporary hair loss** , also **prazoquentil** may cause **transitory loss of taste**
- All anthelmintic has the same side effect
- **All anthelmintic (Class C ) in pregnant**






# Anthelmintic drugs

- Dugs for **cestodes** (tape worm) as ; taenia saginata , taenia solium , hymenolepis nana (dwarf tape) , diphyllobothrium latum ( fish worm ) all can be treated by :
- 1st drug niclosamide (yomesan or niclosan 500mg)

According to the age children 2 – 4 year ½ gm daily , above 4 year 1 gm daily

but adult 2 gm daily





- in case of hymenolepis nana , the daily dose continued for other 7 day
- The tab. Should be chewed thoroughly .
- Take purgative after finish from treatment

2nd drug Praziquentel 15-20 mg/ kg oral single dose used






- Neclosamide ( yomesan ) effect on tap. Worm & other cestodes & fish worm

➢ Dose: On empty stomach.

❖ For Adult 4Boxs (16 tabs)

- First Day 4 chewable Tablets
- From Second Day to rest of week 2 Tablets per Day

❖ For Children: (4-9 years) 2Boxs (8tabs)

- First Day 2 chewable Tablets
- From Second Day to rest of week 1 Tablet per Day






- For Infants: (2-4 years) 1Boxs (4tabs)
  - First Day 1 chewable Tablets
  - From Second Day to rest of week 1/2 Tablet per Day

➢ ***<u>Counseling during dispensing of the drug :</u>***

- Chewable
- Adult Take Magnesium Sulfate (purgative )
- Children Take Liquid Parafen






- Trematoda (fluke ) other type of parasite
- Trematoda (fluke ) as:
- fasciola hepatica ( liver fluke ) , also intestinal fluke
- Schistosoma ( blood fluke ) as S. haematobium , S. Japanicum , S. mansoni
- Paragonim ( lung fluke )






- **Drugs effect on the trematodes** (antibilharzial ) it is the drug of choice for all types of bilharzias 30 – 40 mg /kg oral single dose the maximum dose is 60 mg/kg single dose
- Practical above 45 kg take 4 tab. , less 45 kg take 2 tab. Or **One tab. For each 20kg**
- Available in biltricid 600 mg , distocid 600 mg
- Mirazide : twice daily






- Praziquantel ( Biltracid ) effect on Schistosoma also effect on cestode

➢ <u>Dose:</u>

- For Adult: 4tabs One Shot
- May be 2 then 2 Due to allergy
- For Children: 1 tab/20kg (30-40 mg/kg/dose)

➢ Praziquantel Can be used by half dose instead of Neclosamide if not avalable






# Antiviral

- **Generally :** it is DNA Neocletide transcriptase inhibitor drugs
- **GroupI**
- Acyclovir
- Famciclovir
- Valaciclovir
- Oseltamivir
- Zanamivir
- Amantadine & tramantadine (virumerz )

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# Antiviral

- **GroupII**
- Lamivudine
- Adefovir
- **Group III**
- Valganciclovir (valcyte 450 mg tab. ) effect on Cytomegalovirus (CMV ) & as prophylactic for

Immunocompromised patient ( bone marrow , organ transplantation )






- **Group I** more effective on the following :
  - Herpes Simplex
  - Herpes Zoster
  - Mumps
  - Influenza A,B
  - Avian influenza
  - Chicken Box
  - Cold Sores






- Zovirax & Virustate

➢ Dose: (Frequency & quantity )

- For Adult:200mg One Tablet Four Time or more daily
- 400 & 800mg One tablet Twice or more daily
- For Children: 200mg susp.(10 mg/kg/dose)
- Famcyclovir ( Famvir )

➢ Dose:

- One Tablet Twice Daily or more





- Valcyclovir ( Valterex )

➢ Dose:

- One Tablet Twice Daily or more
- Osaltamivir ( Tamflu , Osalta )

➢ Dose:

- One Tablet Twice Daily or more
- Amantadine ( Pkamerz )

➢ Dose:

- One Tablet Twice Daily or more (100 – 400 )

# Antiviral

- Zanamivir ( Ralenza ) Rotahalar
- Dose:
- Tab Device Powder Inhalation
- 2 Tabs Twice Daily For 5 Days
- OR 1 Tab Twice Daily For 10 Days
- Tramantadine ( Verumerz ) topical cream
- Used twice daily or more






- **Group II** ( Zeffix , Hepsera )
- More Effective on :
- Hepatitis.(B)
- AIDS.
- **Zeffix** :
- Dose:
- Once Daily Dose or ( 100 – 300 mg ) in divided doses






## Antiviral

- Side Effect of Ziffex
- Alopecia
- Constipation.
- Insomnia.& also peripheral neuropathy & …
- **Hepsara ( Adevovir 10 mg )**
- **One Tablet Daily**
- **S.E ; may be diarrhea & headache**
- Influenza Vaccine / inact. (**Vaxigrip or Influ c )**
- **One injection / year**





# Antifungal

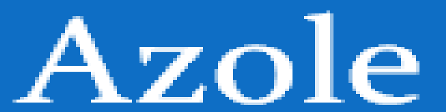
Anti Fungal

- Azole
- Allylamine
- Polyene






# Antifungal




Imidazole

Triazole






# Antifungal

- Imidazole  as the following
- Ketconazole all dosage form
- Miconazole ( daktarin ….
- Econazole (pevaryl….
- Isoconazole(Travocort &vocort as combination
- Clotrimazole
- Clioquinol( Betnovate C )
- Sertaconazole  (dermofix )






- Triazole as the following
- Fluconazole
- Itraconazole






# Antifungal

- Ally amine : good dermatomycosis effect specially oncomycosis :as
- Terbinafine ( lamisil , …..
- Naftifine ( exodril ,…
- Amorolifine ( Leceuryl lequer once or twice weekly
- Butenafine ( derfina gel , spray ) once daily






# Topical Preparation

- **Topical preparation include the following**
- 1- Topical anti fungal only
- 2- Topical anti fungal & corticosteroid
- 3-Topical anti bacterial only
- 4- Topical anti biotic & corticosteroid
- 5-Topical anti viral only
- 6- Topical multi component preparation
- 7- Topical corn , callus & warts preparation






# Topical preparation

- 8 - **Topical acne preparation**
- 9 - Local anesthetics drugs (pile , depilation , burns , toothache, premature ej.
- 10 - Topical skin ulcer & burns
- 11 – Topical & oral skin bleaching
- 12 - Topical Preparation for alopecia areata & vitiligo
- 13- Topical preparation for Psoriasis & dandruff





- 14-**Topical corticosteroid**
- 15- **Non corticosteroid** with same effect
- 16- Topical soothing & anti allergic preparation
- 17- Topical preparation for varicose &hematoma
- 18- Topical preparation for scabies & lice
- 19- Topical preparation for hemorrhoid
- 20 - Topical miscellaneous preparation
- 21- Topical preparation for hair falling






- **Main application  it is potent:**
  - Anti-inflammatory
  - Antipruritic
  - Used in variety skin condition specially in children as
  - Sever napkin dermatitis
  - Infantile eczema
  - Seborrheic dermatitis






- **<u>Main application it is potent:</u>**
- Also sever itching associated with acute and chronic allergic conditions
- Also in alopecia areata , psoriasis , vetiligo
- Combined with bleaching preparation
- can be used in skin transplantation
- Topical corticosteroid are **contraindicated in** the following :
- Viral infection of skin as chicken pox ,





- **Topical corticosteroid are contraindicated in the following** :
- Viral infection of skin as chicken pox , herpes simplex
- Bacterial , tuberculosis or syphilitic skin lesion , ….
- Cutaneous reaction to vaccination
- **Topical corticosteroids are available in :**
- Cream suitable for acute & wet lesion &napkin derm.
- Ointment are suitable for chronic dry lesions
- Gel & solution is good in hairy area
- Lotion is suitable for large area

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- The main side effect of topical corticosteroid :
  - Bleaching effect.
  - Hirsutism.
  - Immunosuppressive effect.
  - Dark Spots.& blemish
  - Thinning of the skin
  - H.P.A Axis Suppression.






- The main side effect of topical corticosteroid :
- Bleaching effect. (pigmanorm)(whitening) Dermovate
- Hirsutism. (Alopecia areata) Betnovate Scalp
- Immunosuppressive effect.
- Flaring of infection.
- Decrease Healing.
- Skin transplantation



- H.P.A Axis Suppresion. (Hypothalamus Pituitary Adrenalcortex)
- Linear Growth Retardation.






## ➢ Precautions & (Counseling with dispensing & Prescribing ) :

- ❖ Avoid long term use.
- ❖ Avoid contact with Eye.
- ❖ Avoid use with in contact skin ,(infected) skin
- ❖ If use with AB OR AF stop after 5 days.
- ❖ Children:
  - Short duration as possible ( 3 – 5 days ) in acute
  - In chronic must choice mild non fluorinated
  - Use Mild to Moderate type (thin layer)
  - If Potent use type with low systemic effect give Once Daily.

## ❖ Face:

- Use suitable dosage form.(cream)
- Suitable duration.
- Cream (rapid absorbed, mild or moderate effect)






- **Potency are :**
- Mild
- Moderate
- Potent
- Very potent






## ➢ Mild Potency Corticosteriods :

- ❖ Hydrocortisone Acetate.(Alfacort , cortiderm )
- ❖ Alcometasone ( perderm )
- ❖ Flumetasone.(Locacortene & locacortene vioform )
- ❖ Flucinolone.(synalar)
- ❖ Triamcenolone (low Conc.)






## ➢ Moderate Potency Corticosteroids :

- ❖ Hydrocortisone Butyrate.
- ❖ Betamethasone Valerate.(Betnovate)
- ❖ Methyl prednisolone ( Advantan )
- ❖ Triamcenolone (Med. Conc.)






- **Potent Corticosteriods :**
  - Betamethasone Diprobionate (diprosone ….
  - Mometasone.(Elica,Metaz)
  - Fluticasone.(Cutivate)
  - Triamcenolone (High Conc.)
- **Very Potent Corticosteriods :**
  - Clobetasol.(Dermovate)






- **Potency affected by :**
  - Salt.
  - Molecule
  - Conc.
  - Dosage Form.( solution , lotion , gel , cream , ointment )
  - Repeat. ( need to clarifying )
- cream:(Face) Rapid absorbed, Mild effect , Moderate effect.

Oint.: (Dry skin area)

Delayed in absorption, Potent effect






- <u>Combination ofCorticosteriods</u>

Betamethasone +Clotrimazole

Betamethasone +Clioquinol

**Betnovate C**

Betamethasone +Miconazole

**Betazole**

Betamethasone +Neomycin

**Betnovate N.' Betamed N**






# Combination of Corticosteriods :

Betamethasone +Clotrimazole

**Lotriderm**

Betamethasone +Clioquinol

**Betnovate C**

Betamethasone +Miconazole

**Betazole**

Betamethasone +Neomycin

**Betnovate N**

Betamethasone +Gentamycin

**Garason** **Betamed N**

# Combination of Corticosteriods :

Betamethasone +Fusidic acid

**Fucicort**

Betamethasone +Salisylic acid

**Salibet** **Diprosalic**

Betamethasone +Miconazole+Gentamycin

**Betazole G**

Betamethasone +Calcipotriol

**Diavobet**






# Combination of Corticosteriods :

Betamethasone +Clotrimazole

**Lotriderm**

Betamethasone +Clioquinol

**Betnovate C**

Betamethasone +Miconazole

**Betazole**

Betamethasone +Neomycin

**Betnovate N**

Betamethasone +Gentamycin

**Garason** **Betamed N**

# Combination of Corticosteriods :

Triamcinolone + Econazole

**Pevisone**

Diflucortolone + Isoconazole

**Travacort** **Vocort**

Flumetasone + Clioquinol

**Locacorten vioform**

Triamcinolone + Neomycin +Gramicidin +nystatin

**kenacomb** **Panderm**






# Combination of Corticosteriods :

Hydrocortisone + Miconazole
**Daktacort**

Hydrocortisone + Clioquinol
**Cliocort**

Hydrocortisone + Iodohydroxyquin
**Dermocort**

Hydrocortisone + Fusidic acid
**Fucidin H**

Hydrocortisone + Neomycin + Natamycin
**Pimafucort**



# Combination of Corticosteriods :

Mometasone + Miconazole

**Elica M**

Mometasone + Miconazole +Gentamycin

**Momenta**

Mometasone + Salisylic acid

**Elicasal**






# Topical Antifungal

## Clotrimazole

| | |
|---|---|
| **Canesten** | **Clotrex** |
| **Dermatin** | **Cozol** |

## Miconazole 2%

| | |
|---|---|
| **Dacktarin** | **Miconaz** |
| **mikozal** | **Fungyzole** |






# Topical Antifungal

Ketoconazole 2%

**Nizoral** **Vavo**
**Clarazole** **Droff**

Tolnaftate

**Tineacure**






# Local vaginal antifungal & other infection

- Local vaginal products & related cases :
- Antifungal
- Antibacterial
- Antiprotozoal
- Polycresoline as antiseptic & Astringent
- Vaginal cleansing






`

# Comparison between vaginitis

| Trichomonus | Bacterial | Fungal |
|---|---|---|
| ❖Yellow to Green discharge<br>❖Bad odour<br>❖Mild itching<br>❖Predicted with Sexual intercorse | ❖ white toyellow discharege<br>❖Mal odour<br>❖Mild itching<br>❖Predicted in post menoposal | ❖White cheesy discharge<br>❖Mild<br>❖Sever itching<br>❖Young ages. |

# Treatment

## ➢ Trichomonus:

- ❖ Vaginal douche.
- ❖ Metronidazole (systemic,local)

## ➢ Bacterial:

- ❖ Vaginal douche.
- ❖ Clindamycin.

## ➢ Betadine vaginal douche:

- ❖ Use for only from (3-5)days

## ➢ Pregnant vaginal douche:

- ❖ Natural douche (Estra Ex)



## General precaution with eye & eye drop application

- Generally eye drop is isotonic products & sterile
- Opened eye drops vials must keep in refrigerator & still suitable for one month after opening
- Eye drops put in inner canthus
- If there is exudate in the eye must be cleaned by suitable cleanser as blephaclean, Nacl



# Eye Preparation

- Eyes drops & ointment must be continuous use
- C.I drugs in glaucoma :local Corticosteroids , local decongestant , Mydriatics , NSAIDs , systemic antihistamine with high effect anticholinergic drugs
- Corticosteroids with is C.I with viral infection , also other infection
- Eye drops put on the lenses be free from preservatives






# Eye Preparation

- Different eyes drops in the prescription must be separated during by application by some time
- Referral eye problem
- **Different group of eye drops**
    - Moisturizing eye drops
    - Decongestant
    - Decongestant with antihistamine
    - Anti allergic eye drops
    - Non steroidal anti inflammatory eye drops
    - Ant infection eye drops








- **Different group of eye drops**
  - Glaucoma eye drops
  - Mydriasis  eye drops
  - Cataract eye drops






- **Artelac** Advanced active ingredient is Sodium-Hyaluronate 0.2%,
- has a viscoelastic structure, with excellent **mucoadhesive** properties
- it helps the epithelial healing process (a **cicatrizing** effect).
- increased hydration of the corneal epithelium as it is capable of holding a large water volume and releasing it gradually ("**water-tank" effect**).

- **It is preservative free and compatible** for use with all types contact lenses
- 1 to 2 drops / day, or as required
- ***Optive™ UD***
- Artificial Tears (**Lubricant and Osmoprotectant**)
- **Lubrication** by two polymers Carboxymethylcellulose and Glycerine.
- **Osmoprotection** by two osmoprotectants Levocarnitine and Erythritol.






## Dry eye

- Place 1 or 2 drops in the eye(s) as needed.
- This product is **recapped unit dose** and **preservative free**.
- ***Lorinex syp*** : contain desloratadine (     )  dose as
- Age 6-12 Month: 1mg Once daily.
- Age 1-6 Years: 1.25 mg Once daily.
- Age 6-11 Years: 2. 5 mg Once daily.
- >12 Years: 5 mg Once daily.
- **Lorinex is Effective in relieving itching throughout the treatment period(2weeks)**






## Urinary tract drugs & problems

- Urinary tract products :
  - Antispasmodic
  - Urine incontinences drugs
  - Urine effervescent drugs & practical application
  - Benign Prostatic hyperplasia drugs
    - Alpha blocker drugs
    - 5 alpha reductase inhibitor drugs
    - Natural & herbal products
    - Decongestant drug






- Urinary tract is : Urethra , Urinary bladder , Prostate gland , ureter , pelvis & kidney .
- Urinary tract infection is **diagnosed** by the presence of **M.O** in the urine ( **culture** ) or **Pus** in urine …. **Urine analysis**
- **Or by symptoms or signs** of bacterial infection in one more parts of urinary tract
- UTI may be one of the following
  - **Un complicated UTI** : infection without any abnormalities interfere with normal flow of urine
  - **Recurrent UTI** :
    - Relapse where the infection return soon after completion of therapy by same M.O
    - Reinfection where the infection return by an other M. O
  - **Complicated UTI** : infection with abnormalities as stone , enlarge prostate ,

- **Upper UTI** : as pyelonephritis , Glomerulonephritis , …
- **Lower UTI** : as Urethritis , cystitis , prostatitis
- **Symptoms associated with lower UTI** e.g. cystitis are :
  - Burning in urination ( dysuria )
  - Increase in the frequency of urination
  - Urgency urination
  - Lower abdominal discomfort
  - Urine is turbid , dark , and foul smell
  - Painful intercourse in female
- Symptoms associated with upper UTI e.g. Pyelonephritis are :
  - Not only urine symptoms but also
  - **Chills , fever , headache , & Malaise**
  - **Vomiting**





- **Uncomplicated UTI** & **lower represent about 90%** & sexually intercourse considered as predisposing factor where in **female increase from 20 % to 40 %**
- **Female are more susceptible than male** due to the structure
- **Atypical UTI infection** : by atypical pathogens especially sexual transmitted disease as **Neisseria Gonorrhea** , also **chlamydia**
- **Gonorrhea**
    - Symptoms ( manifest from 2 to 7 days after exposure & include urethral pain , creamy – yellowish & bloody discharge , dysuria , in women also accompanied by pelvic pain , tenderness & may be fever






# Urinary tract drugs & problems




- E. Coli
- Klebsiella
- Proteus
- Pseudomonas
- Neisseria
- Chlamydia

## Lines of treatment






- **The gastric** secretion occur in 3 phases ( **Cephalic stage** due to vagal stimulation ( taste, odor , vission … ) , **gastric stage** due to physical action (food on the m.m) , **chemical** (Hcl secretion) , **intestinal phase** due to partially digested food
- **Risk factor for hyperacidity & ulcer (counseling )** , Caffeine containing products, Corticosteroids, NSAIDs , Alcohol intake , smoking , stress , food style & fermentable food , exercise , sleep , ……

- **Symptoms of hyperacidity** : ( heart burn , gases , indigestion , regurgitation ...
- Continuous hyperacidity or/ with other cause as helicobacter pylori or some drugs may cause peptic ulcer (duodenal or gastric ulcer )
- **Roughly differentiation between duodenal** & **gastric ulcer on the counter** – pain occur within 30- 60 min. after meal in gastric ulcer & continue for 90 min.






- But 2 - 3 hours after meal in duodenal ulcer & continue until next meal
- Vomiting occur with gastric ulcer
- Relief with food there for accompanied with increase in the weight in duodenal ulcer
- The pain & vomiting increase with food therefore accompanied by weight loss in gastric ulcer






- **1st gp. Neutralizing anti acids** as caco3 , NaHco3 , some product contain mag. Or Alu. , but other contain mag.+ Alu. ( **Magalderate** ) , other product contain **alginate**
- Different dosage form (Susp. , chewable tab. , effervescent powder , ….
- **General side effect** : Rebound effect specially in bicarbonate containing products , diarrhea in products containing Mag.






- Also occur **constipation** in drugs contain Alu., drugs **contain sodium** can occur (salt retention ) & alkalosis there fore it is contra indicated in C.H.F. ,uncontrolled hypertension , kidney failure , some time taste lead to nausea in suspension
- **Make complex** with different dugs as tetracycline . Quinolone ,phenytion, isoniazide , So must separated from each other






- **Selling point** ( Advantage ) **rapid effect** , **Magalderate** no diarrhea nor constipation as moxal ,
- **Algenate** coate the M.M of the stomach , also make barrier between esophagus & stomach in Gerd as in gaviscon
- Some drugs **contain local anesthetic** as in mucogel , other **contain anti flatulance** as moxal plus & epicogel

Different dosage ( effervescent & chewable )

- Neutralizing antacid **frequency of dose** is **after meal & at necessary**
- **but alginate** take before meal in hyperacidity & after meal in Gerd
- **2nd gps H2 blockers** : blocking histamine receptor in acid producing cell in stomach there fore they block the **formation of excess** acids
- Ex.Cimatidine Rantidine ,Famotidin nizatidine

concentration



- **Clinical application** : hyperacidity , Gerd , peptic ulcer ,
- **We treat.** Hyperacidity **only** there fore they should not be prescribe for more than **2 week**, then refer where duodenal ulcer take at least 4 week & gastric ulcer take at least 6 week
- **In hyperacidity** use the low conc. 75 mg but physician prescribe high conc . 150mg or 300mg






- Famotidine low conc. 10 mg , but 20 & 40 mg is high conc, but nizatidine is 150 & 300mg
- **Frequency of dose** twice daily before meal
- **Side effect** : Hypotension , Confusion , dizziness , Gynocomostia , Galactoria , ranitidine lead to reversable jundice للبحث
- **3rd gp. Proton pump Inhibitor** : block H/K atapse enzyme in parietal cell in the stomach this inhibit H entrance to the cell & this inhibit Hcl synthesis

- **The available molecules** of proton pump inhibitor : Omeprazole ( Losec ) , Pantiprazole (pantazole ) , Lanzoprazole (lanzor ) , esemoprazole ( Nexium ) , Rabiprazole ( pariete )
- Proton pump is molecule in certain cell (parietel ) pumps the acid into stomach where it take K ion out & replace H ion by stop this process stop Hcl synthesis & pump in stomach






- **Comparison between P.P.I & H2 blocker** : the main point are ( **Action** , **onset of action**, **frequency of dose**) where P.P.I delayed onset of action but H2 blocker begin with 1 hour , duration of action is long duration of action 24 h or more in some members, but H2 blocker extend for 12 hour
- Use of H2 blocker with proton Pump inhibitor enhance the treatment & increase controlling






- **Feature point** : is the most widest use now
- Is the most effective one now , long duration of action the official Fre.of dose is once daily before meal , **one of triple therapy** , one member as **pantoprazole has steady conc.** & long duration of action may extend more one day effect ( as prophylactic day after day or more ) , **low conc.** Can be used for hyperacidity **for 2 week only** ,
- **Omeprazole** effective in bleeding gastritis

- Lanzoprazole , esoprazole ,omeprazole can be used for Gerd & erosive esophagitis in children
- **Clinical application** : hyperacidity ,peptic ulcer
- **GERD , Zollinger Ellison** ( autoimmune disease ) , **prophylactic** with different drugs specially **chemotherapy** , ….
- All proton pump inhibitor is **pro drug with acid resistant enteric coated** to protect them from premature degradation by gastric acid juice

- Where the coating of products  is removed by alkaline media in the duodenum therefore must not take with neutralizing anti acids in the same time






- **All proton pump inhibitor take before meal** to be more effect but **rapiprazole** is less one affected , then **pantiprazole**
- N.B : P.P.I & Plavix drug interaction due to liver inhibiting enzyme specially omeprazol

✓**WARNINGS AND PRECAUTIONS**

- Diminished Antiplatelet Activity Due to Impaired CYP2C19 Function Proton Pump Inhibitors- Avoid concomitant use of Plavix with omeprazole or esomeprazole because both significantly reduce the antiplatelet activity of Plavi

- **The main side effect & precaution** with use of the proton pump inhibitor : Constipation , diarrhea , **headache** , dizziness , **increase** the **liver enzyme** but **pantoprazole** is less one , using of P.P.I. for long periods can lead to






- Hypochlorhydria (chlorohydra ) this lead to decrease absorption of vit. B12 & folic & Mg & Ca ,zinc ,copper, iron, ( **coss sales supplementation** ) ,
- Also decrease absorption Of some drugs as **domperidone & fluconazole & itraconazole** ,
- **metaplasia** , also use for long periods lead to
- Also using of P.P.I for long period without consultant follow up may **lead to musk for carcinogenic symptoms**






- 4th gp . Coating drugs Sucralfate ( gastrofait ) coating for mucous membrane of stomach & begin its action in some acidic media & generally take 1- 2 gm twice daily
- Enhance the healing & use topically as avene saclfate
- Main side effect is constipation , complex with other drugs
- Also bisthmus used as coating as in ( Danol ) also has different S.E as constipation , complex with other drugs but also heavy metal toxicity






- By cumulative effect (antidote is pencillamine ) , also black tongue , black stool
- 5th gp. Prostaglandin analogue ( Misoprositol ) as in cytotic which lead to abortion
- 6th gp. M1 receptor antagonist which decrease the gastric secretion as gastrozepin or sulpride
- **H. pylori** ( helicobacter pylori ) & triple or Quadra therapy






## Recommended regimens for *Helicobacter pylori* eradication in adults

| Acid suppressant | Antibacterial | | |
|---|---|---|---|
| | Amoxicillin | Clarithromycin | Metronidazole |
| Esomeprazole 20 mg twice daily | 1 g twice daily | 500 mg twice daily | — |
| | — | 250 mg twice daily | 400 mg twice daily |
| Lansoprazole 30 mg twice daily | 1 g twice daily | 500 mg twice daily | — |
| | 1 g twice daily | — | 400 mg twice daily |
| | — | 250 mg twice daily | 400 mg twice daily |
| Omeprazole 20 mg twice daily | 1 g twice daily | 500 mg twice daily | — |
| | 500 mg 3 times daily | — | 400 mg 3 times daily |
| | — | 250 mg twice daily | 400 mg twice daily |
| Pantoprazole 40 mg twice daily | 1 g twice daily | 500 mg twice daily | — |
| | — | 250 mg twice daily | 400 mg twice daily |
| Rabeprazole 20 mg twice daily | 1 g twice daily | 500 mg twice daily | — |
| | — | 250 mg twice daily | 400 mg twice daily |






- **Triple therapy is 3 drugs** used to control the H. pylori after diagnosed by C. urea test ( collection of breath samples before & after ingestion of oral solution of C. urea kit , or antibody test ,
- Must not take drugs as anti secretion or antibiotic before test by 2 week
- **Different combination of triple therapy** but the recent one is ( P.P.I. + Amoxycillin + Clarithromycin)






- NSAIDs – associated ulcer can be controlled or treated by misoprositol, then Then proton pump inhibitor

| | Gastric &Duodenal ulcers Healing | Maintenance | NSAID induced ulcer | GERD |
|---|---|---|---|---|
| H2RA<br>Cimetidine<br>Famotidine<br>Rantidine | 300 mg QID<br>20 mg BID<br>150 mg BID | 400-800 mg HS<br>20-40 mg HS<br>150-300 mg HS | Not indicated | 300mg QID<br>20 mg BID<br>150 mg BID |
| PPIs<br>Lansoprazole<br>Omeprazole<br>Pantoprazole<br>Raeprazole | 15-30 mg BID<br>20 mg OD<br>40 mg OD<br>20 mg OD | 15-30 mg OD<br>20 mg OD<br>40 mg OD<br>20 mg OD | 15-30 mg OD<br>20 mg OD<br>40 mg OD<br>20 mg OD | 15-30 mg OD<br>20 mg OD<br>20 mg OD<br>20 mg OD |
| Sucralfate | 1G QID | Not indicated | | |






- **Ulcerative colitis drugs** : as Sulphasalazine as in salazopyrine , Methalazine as in pentasa , Asacol , Sulofalc , Budosinide corticosteriod
- **Liver support drugs** : sylamarine as in legalon ,






- , Mepasil ( sylam. + milk thistil ) , cefsylamarin
- Other liver support Hepamerz (L.ornithine +..) but ursofalk used for gallbladder stone
- **Antidiarrheal drugs** : Non infected diarrhea used astringent & adsorpant ( Kapect , kapeten ,Codiene containing drugs , Tanic acids containing prod., but drugs **decrease the peristalsis** movement as lopidium Hcl ( Imodium ) but infected diarrhea not use drugs stop the perstalsis mov.

- &the  infected diarrhea according to the type of infection
- **General symptoms of infected diarrhea ( may be viral or bacterial or fungal )**






- **Prokinetics** : drugs stimulate GIT motility as Metoclopramide (primperan ),domperidone (motilium),cisapride (praplcid ), Mesopride , eteprid , antibiotic. as erythromycin
- **The action** of prokinetics occur through ; increase in the cholenergic activity lead to release of acetyl choline , dopamine D2 receptor antagonist ,






- Also some drugs **has agonist activity at 5HT4** receptor as mesopride , etepride
- **General clinical use of prokinetics** (remember that motilimum is preffered drug ) : Gasroesophageal reflux ( GERD ) , Indigestion & dyspepsia ( non ulcer dyspepsia ) , Hiccup , colon problems , post partum as lactating stimulation , post surgery to correct impaired gastric emptying ,






- Also **support** treatment as some members as mesopride used for **constipation** ,
- Also preventing the vomiting where increase the gastro esophageal sphincter pressure
- **The general side effect of prokinetics** : extrapyramidal effect = Parkinson's like effect due to central dopamine antagonist ,also Galactoria & Gynocomastia …. Impotency & **menstrual disturbance** , also **C.N.S.** symptoms






- As drowsiness , insomnia , anxiety, agitation
- The effect appear due to high dose about 25% of reported side effect but 5% of receiving the prokinetics for long period
- **Domperidone** ( Motilium ) sales point it is not cross blood brain barrier by significant value there fore it is less side effect ( no or less central effect ) , it has peripheral effect ( **gastro kinetics** ) , also it has dopamine receptor antagonist but in the

- Chemoreceptor trigger zone which lies outside the blood brain barrier ,
- Domperidone increase the gastro esophageal sphincter pressure also regulate the peristalsis movement but there is **no effect on gastric secretion** ,
- **Domperidone take before meal** by 15- 30 min. 3 time / day for adult one to 2 tab. 3 time daily with maximum dose 80 - 120 mg / day






- But children dose 1mg /kg/day divided to 3- 4 doses I.e 0 .25- 0.5mg /kg/dose maximum dose 2mg/kg/day in sever cases
- But metoclopramide roughly half the dose of domperidone i.e 0.5 - 1mg/kg/day in sever cases divided in 3 – 4 doses
- Different dosage form of domperidone are tab. 10mg , suspension 1mg/1ml , supp. Available in 10 mg , 30 mg , 60 mg






- N.B. to be more accurate & more safe according to the last dose information not prescribe supp. 30 mg before 10 year there fore 10 mg used till 10 year age , 30mg from 10 year till adult & also for adult then 60 mg for adult & not increase than twice /day
- **Any reduction for gastric acidity** impaired the absorption of domperidone , it excreted urinary &GIT , & half life 7- 9 hours






## *GIT system drugs*

- Some cases **contra indicate domperidone** as -prolactin- releasing pituitary **tumor** , - co administration with oral anti acid ,or ketconzol - **gastro intestinal hemorrhage** , - Mechanical **intestinal obstruction** ,- **intestinal perforation**
- **Other anti emetic drugs** : 5HT3 **serotonin antagonist** as anti emesis for chemotherapy drugs as **ondanosetron** ( Zofran )






- **Antiemetic for pregnant** : vit. B6 , navidoxine (pyridoxine + miclizine ) , also can be use as 2nd choice ( domperidone , metclopromide ) , also zofran class B in pregnant للبحث
- N.B ginger as natural product not used as antiemetic in pregnant where lead to some uterine contraction
- Dexamethasone with metclopromide increase the anti emetic effect of metclopromide , also domperidone & metclopromide can be used

- With zofran as antiemetic in chemotherapy treatment protochol
- **Chlorpromazine** (neurazine , largectil ) has also dopamine receptor antagonist action can also be used as antiemetic beside antipschychotic effect
- **Promethazine** (promentine ), Histoloc as anti histamine has anticholinergic activity can be used as anti **emetic effect specially with diarrhea** , also used as **anti dote with** S.E of pro kinitics

- **Laxative** : products enhance the defecation & include the following : - **1st gp. Bulk forming** laxative as bran , aspigengal , poly ethelene glycol , mucevital , all products contain methyl cellulose , this products effect after **48hour** , there for it suitable for chronic cases , also suitable for pregnant , also used for slimming but some **cons as** : intestinal obstruction there for must advice by taking large amount of water , not suitable for

- Acute cases or sudden cases of constipation
- **Bulk forming products used as laxative & slimming** but the dose of slimming double dose as , bran as laxative 2 tab. 3 time but as slimming 4- 6 tab. 3 time daily before meal
- **2nd gp. Stimulant (contact )** laxative then become ( purgative or cathartic ) it increase the contraction of the smooth muscle , its effect begin **after 6- 12 hour**, examples for this






- Group : Senna (sennalax ), bisacodyl(dulcolax ) , Recinoic acid (castor oil ), cascarra ( tobesta tea , diafa tea ) , ... castor oil cap. Dose 6 cap.
- **Precaution during use or prescribe** : - do not use in child , - don't use in pregnant except dulcolax , - senna & cascara may lead to red or dark yellow urine color ,- repeat use may lead to dehydration ( electrolyte loss) , preferable use once daily & repeat when needed ,






- **Stimulant laxative** is suitable for acute or sudden constipation , some senna of herbal product as arcopharma senna recommended 3 time daily
- **Osmatic cathartics** :- glycerin ( laxoline ) its effect after **15- 60 min**, suitable to acute & sudden cases also can be used for pregnant & baby ,- Lactulose its effect after **24 hours** ,suitable for chronic cases , pregnant , diabetic patient ,

- Also suitable for hepatic comma with neomycin , **the cons** is flatulence
- **Saline Cathartic as Mg sulphate** ,Na phosphate (picolax drop) , Na picosulphate drop , has the effect of osmotic cathartic & quickly effect after **2- 6 hours** ,
- Saline cathartic preferable in remove the parasite , eliminate the poisons , **but do not use in renal impairment**






- **Wetting agent (laxative ),long term use** as liquid paraffin (mineral oil ),docusate (dioctylsulphosuccinate ) in Norgalax may be added in enema (adult & child) , but long term use of liquid parafin must compensate by KEDA fat soluable vit. Supplementation
- Norgalax not use for pregnant , less 12 year
- **Fiber laxative** (also bulk forming laxative ) but in different products in the pharmacy & famous use & some member as benefiber

- used In diarrhea & constipation where in diarrhea absorb the water from the stool & make the bulk , but in constipation absorb the water from adjacent organ & make the bulk
- **Examples for these drugs** in the pharmacy are Bane fiber , agiolax , normacol , normacol plus , fybogel (orange taste ) , Movicol , …
- **Some sales point** : taste as orange taste in fybogel , apple taste as banefiber , odoless as






- Banefiber powder odor less there fore can be used on tea or juice ,but  apple taste in suspension
- Some members take as granules (سافوف ) in mouth direct then  large amount of water as agiolax , normacol , normacol plus ,
- Used for all cases also in pregnant but must be carful with combined product where may contain senna by large amount






- **Constipation** is a condition that is difficult to define and is often self diagnosed by patients. Generally, it is characterized by the passage of
- hard, dry stools less frequently than by the person's normal pattern.
- Or change than the normal in adult or 48 to 72 in children
- Acute constipation
- Chronic constipation






- Diet
- Lack of exercise
- Age
- Nerves, stress
- **Ignoring the urge**
- Drug induced – pain medications, iron, calcium, blood pressure medications, etc
- Disease States/Conditions – Multiple Sclerosis, hypothyroidism, hemorrhoids, Parkinson’s, senility, Irritable Bowel Syndrome, pregnancy, diabetic neuropathy, etc






Table 3 Drugs that may cause constipation.

| Drug group | Drug |
|---|---|
| Analgesics and opiates | *Dihydrocodeine, codeine* |
| Antacids | *Aluminium salts* |
| Anticholinergics | *Hyoscine* |
| Anticonvulsants | *Phenytoin* |
| Antidepressants | *Tricyclics, selective serotonin reuptake inhibitors* |
| Antihistamines | *Chlorpheniramine, promethazine* |
| Antihypertensives | *Clonidine, methyldopa* |
| Anti-Parkinson agents | *Levodopa* |
| Beta-blockers | *Propranolol* |
| Diuretics | *Bendroflumethiazide* |
| Iron | |
| Laxative abuse | |
| Monoamine oxidase inhibitors | |
| Antipsychotics | *Chlorpromazine* |

- **In history must ask about**
  - Duration of the constipation , Exercise routine
  - Amount of datary fiber consumed
  - Presence of other symptoms
  - Medications used currently for constipation & other
- **When refer the case**
  - **undiagnosed chronic constipation**
  - Change in bowel habit of 2 weeks or longer
  - Presence of abdominal pain, vomiting, bloating
  - Blood in stool
  - Failure of OTC medication
- Lines of treatment :






- **Anti spasmodic** : it is one of anti muscarinic drugs , **the pro type** of antispasmodic is atropine has different indication ( anti dote for organ phosphorus compound, mydriatic effect ,antispasmodic effect in different system , but has different side effect called **atropine like effect** ( blurred vision , dry mouth , constipation , urine retention ) may occur **transient Brady cardia** then followed by **tacky**






- **cardia , palpitation & arrhythmia , mydriasis , angle closure glaucoma** , flushing & **dry skin** Not available in the pharmacy or available in belladonna extract
- but the products available are

\- **Hyocine N butyl bromide** as in buscopan , less absorbed from intestine than atropine there for less in side effect & has effect in different system ,also it is preferable used in acute cases






- **- Verine drugs** as mebevrine ( duspatalin ) , alverine ( spasmonal ) , peniverine (dicetel )
- This group of antispasmodic less side effect than hyocine N butyl bromide but has good effect on colon muscle , there fore it is preferable use in aspastic colon , the frequency of the dose is 3 time / day before meal but mebeverine (duspatalin) as the following mebeverine 135mg & 100 mg used






- 3 time /day before meal but mebeverine 200mg has sales point where used twice / day before meal , also peppermint oil ( colpermin ) used for aspastic colon where has spasmolytic effect & carminative effect but has some side effect ( heart burn , perianal irritation ) there for preferable use after meal to decrease s.e
- **- other antispasmodic** as spasmourginin , Genurin forte mainly used in UT spasm






- **Anti flatulence** : product decrease the gases in the GIT by broken the gas, adsorption the gas or by carminative effect
- Example of anti flatulence simethecone ( dysflatyl , deflate ,… ) , Charcoal ( used in flatulence , diarrhea , constipation , poison ) , herbal products as fennel , caraway , dill oil , menthol , herbal tea, or combination as infacol …..
- **Flatulence in infant** : GIT system in infant not

- Adapted on the new environment & continue about 4 month there fore the flatulence in the **first 4 month** is expected complain & can controlled by – anti flatulence , Massage of the abdomen , Eructate the baby , put infant in prone position but notice respiration ,if there is constipation i.e 48 – 72 hours can use glycerin supp.
- **Digesting dugs** : drugs used to help or enhance





- The digestion & available in the pharmacy in 2 group 1st gp. **Direct digestant effect has** different digestive enzyme as zymogen , spasmocnulase , or combination as pancreoflate , **aerodigest , digestyl** , or **herbal digestant** as artichute , all this gp. Used with meal 3time / day **2nd gp. Indirect digestant** effect through stimulation of the intestinal flora which increase the digestibility as probiotic products

- **Examples for probiotic products** : it is type of fiber with lactobacilli , acidobacilli , bifedobacteria, yeast, some products also with vitamins specially vit. B stimulate the intestinal flora as Bion 3 , protexin , Kalsis , all these drugs used one or 2 tab. Once / day after lunch & children one schaet / day , also can repeat the dose , but the kalsis according to the recommendation of the company can be repeated /day

# The Respiratory System

Nasal cavity
Nostril
Oral cavity
Larynx
Right main (primary) bronchus
Right lung
Pharynx
Trachea
Site of carina
Left main (primary) bronchus
Left lung
Diaphragm

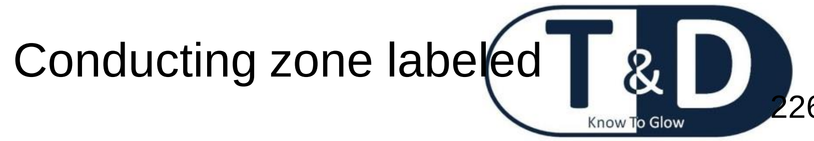


# The Respiratory Organs

- Conducting zone
  - Respiratory passages tha
  - Filters, humidifies and w
- Respiratory zone
  - Site of gas exchange
  - Composed of
    - Respiratory bronchiole
    - Alveolar ducts
    - Alveolar sacs

Nasal cavity
Nostril
Oral cavity
Larynx
Right main (primary) bronchus
Right lung
Pharynx
Trachea
Site of carina
Left main (primary) bronchus
Left lung
Diaphragm

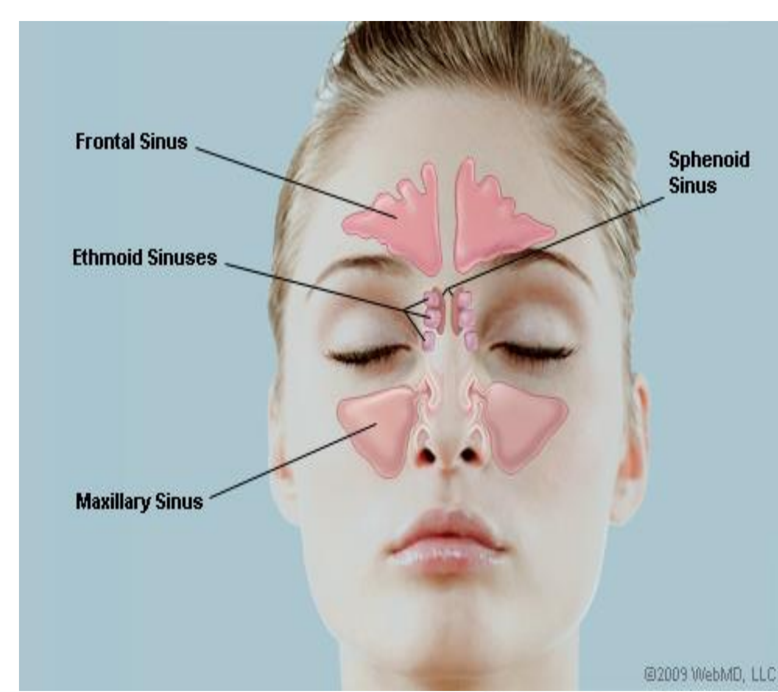



Conducting zone labeled

# Paranasal sinuses

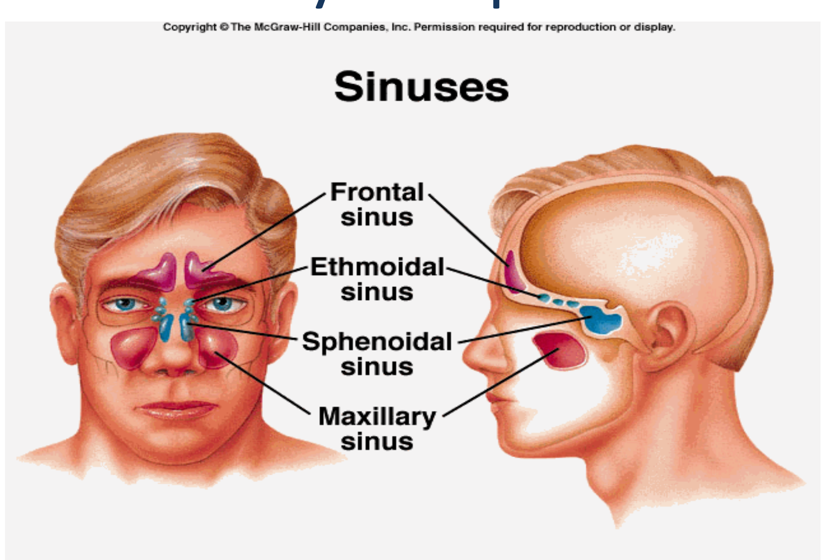
- Frontal, sphenoid, ethmoid and maxillary bones
- Open into nasal cavity
- Lined by same mucosa as nasal cavity and perform same functions
- Also lighten the skull
- Can get infected: sinusitis






# Paranasal sinuses

- Frontal, sphenoid, ethmoid and maxillary bones
- Open into nasal cavity
- Lined by same mucosa as nasal cavity and perform same functions
- Also lighten the skull
- Can get infected: sinusitis









- Common cold products ; products used to common cold case & runny nose problem , according the customer needs & problems will divided to : 1st gp. Without decongestant products   2nd gp. With decongestant products
- 1st gp. Products without decongestant as cafamol (Paracetamol +  doxylamine + caffine ) ,Adol P.M ( paracetamol + diphenhydramine ) ,Paracetamol + fenstil , paracetamol + telfast,






- parcetamole + chlorphenramine maleate
- This gp. Is suitable for the following cases – infant , - uncontrolled hypertensive patient , - pregnant , - BPH , - glucoma patient , diabetic , heart & thyroid problem …. N.B , in glucoma & BPH the preferable combination is Paracetamol + telfast where is less one in anti cholinergic activity & infant the best combination is paracetamol + fenstil (one dp/kg ) twice /day

- 2nd gp products contain decongestant divided
- Divided into products contain - phenylephrine as decongestant as sine up( phenylephrine + chlorphenramine) , panadol cold & flow **yellow** ( phenylephrine + paracetamol + caffine ) ,  vibrocil gel local effect ( phenylephrine + dimethendene ) or – products contain psedoephadrine as decongestant as different drugs with different combination

- **Mainly sedating** & **non sedating products**
- According to customer needs drugs containing the psedoephdrine divided to – non sedating as clarinase ( Ps 120mg + loratidine ) , cirrus (Ps 120mg + citrizine ) & mostly used twice daily , but  - sedating as actifed , rinofed  ( Ps 60mg + tripoloridine ) & also use  twice or 3time  daily , also other products contain Ps as Fludrex , panadol cold & flu (green ) , flumed (






- Ps + chlorphenramine + Paracetamol ) , but
- Also other products as flumed DM ( flumed + dextromethorphane ) , rinofed expectorant ( Rinfed + guafinasine ) , flutab  (Ps + paracetamol +diphenhydramine ) , Adol sinus (ps + paracetamol only )also flutab sinus , sino free ,  sapofen plus & advil cold sinus (Ps + Ibuprofen ) they preferable in sinusitis ,
-








هستوب
HISTOP
HISTOP
CHLORPHENIRAMINE MALEATE SYRUP ANTIHISTAMINE
100 ml




Telfast 180 mg
fexofénadine / fexofenadine
Voie orale / Oral use
15 comprimés pelliculés / film-coated tablets
sanofi aventis




Telfast 120 mg
comprimate filmate
Administrare orală
10 comprimate filmate
sanofi aventis
farmacia acasă



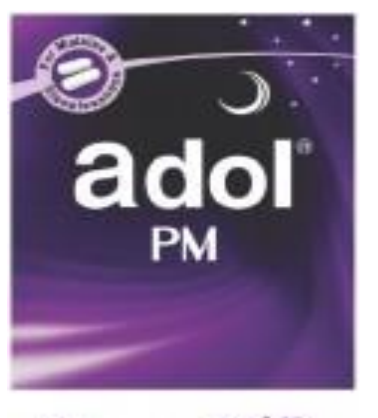

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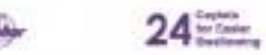



T&D
Know To Glow
TRAINING AND DEVELOPMENT DEPARTMENT

# Picture of products












- **Side effect of decongestant** ( Psedoephadrine ) , -hypertension , - insomnia & due to variation may lead to sedation & high dose may cause respiratory depression , - risk for glaucoma ,& prostata - **irritability** specially in baby ,
- **Contra indication** : - pregnant , Un controlled hypertensive , Myocardial infarction , glaucoma, infant , hyperthyroidism ,
- **Difference ( comparison ) between common**

- **Common cold & influenza** :
- Cause : influenza ; **influenza type A & B virus** , controlled by vaccination (vaxigripe ) or influvac , avian influenza virus, swine influenza virus all are series of HN virus (pandemic ) , but common cold there are **more than 200 different viruses** that can cause the cold ( as coronavirus , rhinovirus , adenovirus ,para infl. ,coxsackie , paramyxo virus ,…. There are no ,

## Respiratory system drugs



Cure for cold but treatment can relief the sym.

- **Onset of symptoms** : influenza sudden onset but common cold gradually appear
- **Fever** : Influenza lead to high fever but common cold lead to mild to moderate fever
- **Chest discomfort & cough**: influenza begin by chest discom. &dry painful cough (ascending ) but common cold (descending) finished by hacking & productive cough






- **Congestion, stuffy & runny nose** : in influenza rare but in common cold is the 1st symptoms then pain in pharyngeal cavity & trachea then bronchitis begin by dry then hacking wet cough ( descending infection )
- Lines of treatment for common cold :






- **Cough** : is signs due to problem in respiratory system (lower & upper)
- **Risk factor for cough (Patient education & counseling )** : smoke , fumes , allergen as pollen grains , dust ,other pollution
- Other important risk factors as bacterial & viral infection , different type of stress , ……






- **Cough products** according to type of cough divided to : –
- **dry cough** products ; suppress the cough as dextromethorphan ( kafosed ) , codeine containing products , honey containing products or as honey but thyme containing products ( mellrusum ), bronchicum (thyme + primula & Ezypan, thyme cap. , also antihistamine help in cough supressant






- used for dry & wet cough but mainly in wet cough , also propalsoft
- **Application for cough suppressing medication** :- dry cough , or produce little sputum , wet cough but cause chest pain , or disturb the sleeping ,
- N.B honey not given for infant less than 12 month where may lead to **risk of botulism**






- **- wet cough lead** to  large amount of sputum & may accompanied by other symptoms as blood , chest pain ,fever , & the products in the pharmacy include the following :






- **Expectorant cough products** : expel sputum as in Guafisine (guaphan, rubitussin , mucinic )
- **Mucolytic cough products** :liquefy sputum as in bromohexine ( bisolvon) , it depolarize the protien in the mucous , ……
- ambroxol is metabolite for bromohexine as (mucosolvan), ….. , all mucolytic must take **after meal** to protect the mucous memb. Of the stomach , it is preferable in the children but notice the infection ,




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TRAINING AND DEVELOPMENT DEPARTMENT

- **Mucoregulator :** can broke the disulphide bonde in the mucous as in carbocystine (rhinathiol) 2% , 5% & with promethazine , acetylcystine (acc 200 , 600 ,… ) some specialist prefer the mucoregulator where not increase the cough
- **Other application for mucolytic & mucoregulator** : - in fertility to decrease the viscosity of semen & cervical mucous , - to liquefy the mucous in sinusitis , to liquefy the discharge in otitis media, swelling

- as expectorant or increase the descending infection as mucolytic ,
- **Wheezy cough** : remember that the **decongestant** has good role in control the this type of cough
- **Irritant cough** : remember that the **soothing** & **demulcent** products has good role in this type of cough






- Also from other use for acetylcystine ; it is used as antidote for paracetamol toxicity
- **Multicomponent cough syp**. This products contain different ingredient by different effect as expectorant , mucolytic , cough suppressant , antihistamine , decongestant . As mentex , rinofed expectorant , flumed Dm , exylene amydramine expectorant, codilar ,….. These type of cough syp is suitable for cough after common cold , irritant , & wheezy cough

- **Herbal cough products** these products mostly contain **ivy** but also may contain thyme or eucalyptus , … , this products is widely used now , & all products contain ivy used for , wet cough mainly & which contain alchol can effect in dry cough as actifox , bronchicum , mellorsum , but ivy contain saponin & emetine which stimulate vomiting specially in children






- **Some precaution in prescribing the ivy** containing products :
- check the bottle before use
- not prescribe for children less than 6 year
- Some products with high concentration of ivy as sinuc must give the recommended dose for adult 2 ml ,- bronchicum elixir is one of herbal






- **Examples** for ivy containing products (prospan , tusipan , juspan , sinuc ,ezipan, leblab , ...... ),
- New herbal drug : Plerus = Pelagonium sedoids has ant inflammatory , antiviral effect , effect on all types of cough






# Respiratory system drugs




Sedoidis



- It relive Cough and mucous by controlling underlying causes
- Researched and approved mechanism of action
  - **Anti-inflammatory effect** " reduction of inflammatory cytokines ,Oral oncology Journal 2011"
  - **Antiviral activity** " Neuraminidase inhibitor, Pharmaceuticals Journal 2011"
  - **Increase CBF** ,Ciliary beat frequency to get rid of irritants, 2004 Elsevier GmbH"
- Patients complain from **Cough** "simple and sever cough" After flu or cold, Smokers ,,,,etc"
- Patients complain from **Mucus**
- Patients complain from **Chest discomfort**
- **Plerus** as **herbal Product** is **very safe and registered in S-FDA**
- Pregnant , under doctor consultation
- lactating women , **Safe**
- Diabetics and hypertension patients , **Safe** and it contain no sugar.
- It can be companied **Safely** with Antibiotics and other medications.
- It is better not to be used at same time with warfarin.






**Cough products for children** : as exylline for children , amydramine for children , rhinatiol 2% , rhinathiol promethazine , Soolan , .....

- similar to honey as mollrusim , bronchicum contain glycerol , .... Therefore can be used as demulcent effect in irritant or dry cough but must be used by small dose numerous number






- **Honey containing products**, as propalsaft , sale point it is suitable for children but not suitable for **diabetic patient** & propal saft not suitable for **asthmatic pat.** but now contain alchol
- **Cough products suitable for diabetic patient** : all sugar free cough syp , herbal cough syp ....
- **Cough products suitable for pregnant** : Herbal cough products , jospan , prospan, ....
- **Cough products with bronchodilator** is Bronqium

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## Drugs used for bronchial asthma patient :

**Bronchial Asthma** mean an inflammatory disease of the airway characterized by episodes of acute bronchoconstriction causing (the **symptoms** of bronchial asthma patient ) : **difficult breathing** specially in expiration , rapid respiration , **chest tightness** , **wheezing** , repeated **cough also increase in night** , all these symptoms **repeated weekly or daily** ,...






- acute symptoms may resolve spontaneously or with use of quick relief medication ( **short acting B2 agonist drugs** )
- **Asthma mediator** as - histamine , tryptase , - Lukotrienes , bradikinine , these mediators diffuse through out the air way wall and cause muscle contraction & vascular leakage , - other mediator is called **cytokines transmitted** by lymphocyte . Cytokines as mediators






- Responsible for the more sustained bronchi-constriction each type of mediator is inhibited by certain drug as histamine inhibited by anti histamine,lukotriene inhibited by montolukast but **Cytokines inhibited only by corticosteroids**
- **Risk factor for the bronchial asthma or tigger stimuli :** as risk factor for the cough
- The drugs bronchial asthma is divided into – **bronchodilator & anti allergic products**






- **Bronchodilator products** include the following **Methyl xanthine containing products** these drugs has **phosphodiastrase inhibitor** effect this lead to increase in cyclic AMP which lead to the bronchodilator effect example theophylline containing drugs ( theoped , theodur , Euphylline , quibiron , minophylline,)
- **Point about theophylline** containing drugs are :1st drug of bronchodilator , more effective in






- Treatment of **nocturnal bronchospasm** , **narrow therapeutic index drug** there fore the usual dose is 3-4 mg /kg of theophylline 3 - 4 time daily in non sustained release drug but in sustained release must follow the recommended frequency of the dose which is mostly twice /day ( begin by low dose ) , the smoker need to increase the dose , or **15- 20** mg /kg / day divided in 3 – 4 doses






- **Side effect of theophylline** :
- GIT up set there fore must take after meal ,

Anxiety ,insomnia , tremor, nervousness & may be tacky cardia , .........

- **Beta agonist drugs B**. act on the receptor as agonist & increase the C AMP which lead to bronchodilator effect & classified to :






- - **Non selective B**. agonist Hexaprenaline ( Ipradol ) , isoprenaline , - alpha & beta agonist ( ephedrine ) but –
- **selective beta agonist as**
- * short acting
- *long acting beta agonist ,






- **Short acting** as salbutamol ( ventolin ) , terbutaline ( bricanyl ) , this type of beta agonist is very important **in acute attack or during the asthma attack** ,
- Salbutamol may be less effective in the age less than 18 month due the development of beta receptor
- **Long acting beta agonist bronchodilator** :
  1. salmetrol ( servent )
  2. or in seratide as combination with corticosteriod
  3. formoterol as in ( foradil ) or in combination with corticosteroids as in symbicort






- **Other use for beta agonist**
  1. Pregnancy fixation as rotidrine (utopar )
  2. Fat burner as clembutrol
- **Side effect of beta agonist**
  1. Tacky cardia
  2. **Arrhythmia or (palpitation )**
  3. Nervousness ,insomnia , anxiety ,
  4. **Irretability , sweating**






- **Muscarinic receptor antagonist**
- **Side effect** : lead to anticholinergic effect (atropine like effect ) dry mouth , blurred vision ,**urine retention , constipation** , **exacerbation of cough** ,
  - Ipratrobium ( atrovent ) ( inhaler & nubilizer )
  - Thiatropium ( spireva ) rotahaler
- **Bronchodilators combination** as combivent ( salbutamol + Ipratrobium )






- **Anti allergic Products as :**
- **Corticosteroids**
- **Antilekotriene**
- **Mast cell stabilizer & H1 blocker**
- **H1 blocker ( Antihistamine )** : according to the degree of lipophilic effect divided into:
  1. **High lipophilic ;** cross BBB & lead to sedation (sedating anti h)
  2. **Moderate lipophilic ,** moderate cross t**o BBB ( moderate sedating )**
  3. **Low lipophilic or hydrophilic not cross BBB ( Non sedating )**






- **Corticosteroids** :has indirec effect it inhibit the mediator & prescribe orally , injection , or by inhaler ( **surface active effect** ) as following
- Corticosteroids only as
  1. fluticasone ( flixotide ),
  2. budosinide (pulmicort )
  3. Cyclosinide ( alvesco )
  4. Beclomethsasone ( Beclosone )
- **Corticosteroids combination** with brondilator as the

1. Symbicort ( budesonide + formoterol )
2. Seratide ( fluticasone + salmetrol )

- **Dosage form** : there are different dosage form for asthma drugs as the following :
  1. Syrup , tab. , supp. , injection
  2. Inhaler & this dosage form need spacer (infant , children , adult )
  3. Rota haler haler dosage form ( how to use )
  4. Turbo haler dosage form ( how to use )






5. Discus dosage form ( how to use )
6. Nebulizer dosage form ( this need to nebulizer equipment ) the nebulizer drugs as ( ventolin solution , pulmicort nebulizer , flixotide nebulizer, atrovent nebulizer , bisolvon drops , Na cl ,….. (& how use the nebulizer equipment )

- **Side effect due to using of corticosteroids** as turbo haler , Rota haler , inhaler :

1. Candida infection , oro pharengeal fungal infection






2. Precipitate on the vocal cord & lead to horse sound ( للمراجعة )

- **Advice or patient education ( Counseling )** with using of surface active corticosteroids
  - Mouth wash with water at least or mouth wash
  - Immune stimulant to prevent the infection
  - Increase the salivation by use gum to prevent dryness & infection
- **Drugs for obstructive pulmonary disease :**






- **Drugs for chronic obstructive pulmonary disease** : COPD is an inflammatory disease
  - All drugs for treatment of asthma
  - New drug Daxas ( Roflumilast ) :
    - it is block phosphodiesterase 4 (PDE4 ) with unique anti-inflammatory effect the drug block chemicals cause the problem also relax the smooth muscle of air passages
    - Take once daily






- **Mild attack of bronchial asthma** : use one bronchodilator as :
- Children below 6 years use theophylline 15 – 20 mg / kg /day in divided doses 3- 4 dose or salbutamol , terbutaline 0.1 – 0.3 mg/kg/day divided in 3- 4 dose ,
  N.B. ventolin sy.5ml = 2mg
- or salbutamol nubilzer 0.25 – 0.5 ml with 3ml saline 3 -4 doses / day , above






- **Moderate attack** : use two bronchodilator with each other 3- 4 day till wheeze free

Also cough product mucolytic or expectorant with bronchodilator is good

- **Mild or moderate persistent** corticosteroid is necessary
- **Sever cases** : hospital management & Nebulizer






- **Patient education & emotional support :** asthmatic patient should be educated about :
- **Nature of disease & prognosis**
- **How to avoid the trigger stimuli**
- **What to do in acute attack**
- **Correct use of inhaler & nebulizer**






- **Common mistakes in asthma therapy** :
- **Use of B2 agonist in age below 18 month** only where the receptors are not well developed & the effect is minimal therefore use of corticosteroid with it to increase the effect
- Use of corticosteroids as first line drug in acute severe attack **but nebulized salbutamol** is the most rapid drug , **adrenaline** & **theophylline** are also rapid **then** corticosteroid






- **Also use of antibiotic** in acute asthmatic attack will not alter the course of illness where the infection almost always viral infection ,
- **Use of cough drug** , not mainly but bronchodilator ,
- **Avoidance of food** , where asthmatic patient must avoid only the food which increase attack
- **Restriction the physical activity** this harmful but must be share may use inhalation before

- **Drugs affecting central nervous system** :include the following
- Neuroleptic drugs = Antipsychotic drugs = Major tranquilizer drugs
- Antidepressant drugs
- Anticonvulsant drugs = ant epilepsy drugs
- Anxiolytics drugs = hypnotics drugs = Minor tranquilizer
- CNS stimulant drugs






- Parkinson drugs as different class

- specific drugs for Alzheimer as different class






- **Drugs for brain aging** these group of drugs act centrally & main uses are dementia ,Alzheimer ,learning difficult in children these drugs **classified into**
- A)Psych stimulant & Nootropics : drugs **protect** cerebralcortics **from hypoxia ,increase** cerebral circulation & **utilization of oxygen in** cerebral cortex as **piracetam** ( nootropil ) , **Vinpoctine** (cavinton ) , pyritinol( encephabol )






- B) Peripheral vasodilator & brain blood vessels vasodilator as **pantoxyphyline** ( trental ) , **codergocrine** ( **hydergine** ) , nicergoline (sermion ) , isoxsuprine ( duvadilan ) , phentolamine (vosamax ) , papaverine (vasorin )
- C) Herbal supplementation as gincobiloba , ginsing , phosphorus , L carnitine , folic acid , omega 3 , arcalion , ....






- **Antipsychotics drugs** used in psychotic states & sever behavioral disorders they induce state of calm **without** causing **sleeping** , **the main indication** specially in pediatric are the following :
  1. Sever anxiety & agitation
  2. Aggressive behavior specially in mentally retarded patient
  3. Childhood & adolescent **schizophrenia**
  4. Hyperactivity & Aggressiveness






**Neuroleptics drugs** = **Antipsychotic drugs** = Major tranquilizers is classified to :

- **Typical low potency** as chlorpromazine (largictil , Neurazine ) **, Thiaridazine** (Mellaril )
- **Typical high potency** as **Haloperidol**(seranace) , Fluphenazine (motival ), Zuclopenthixol ( Clopixol ) , Flupenthixol(Flunxol ) , thiothixene , Chlorprothixen ( Truxal ), Trifluroperazine (stelazine ) , pimozide ( Orap )






**Atypical Neuroleptic** as Olanzapine ( zyprexa ), Quetiapen ( seraquel ) , Aripiprazole (Abilify

Resperidone (Respirdal,Redon, )

Clozapine (Leponex ),

Invega , Welbetron,

Paliperidone , Ziprasidone

Also other neurolyptics

Hydroxyzine (atarax ), Sulpiride (Dogmatil ), Amisulpiride (Solian ) ,

- **Anti schizophrenia** drugs as Quetiapine (seroquel 300 , rezal 200 ) , Olanzepine ( Zyprexa ) , Aripeprazole (abilify ) , .....
- **Anti schizophrenia & other Antipsychotic** drugs as Respirdal,Redon, Leponex , Invega , Welbetron
- **Anti schizophrenia, Antipsychotic & Anti** mania drugs as serenace (halloperidol ), melleril (thioredazine )






**Antimania** drugs Lathium containing drugs as Lethiofore






- **Other antipsychotic drugs with different indications** as (other indication )
  1. **Chlorpromazine** (largectil & Neurazine ) which is phenothiazine derivatives which has **multiple therapeutic action** as - **sedating & hypnotic** , - **neuroleptic (antipsychotic** )it induces quieting , indifference & psychomotor slowing - it is very useful to "**tame**" (**hyperactive & aggressive behavior** ) – it is used in **hyperpyrexia** to **decrease shivering** – it is used in **sever pain to potentiate the action of analgesic**



– it is **preoperative medication** where it **potentiate the action of anesthetics** , also used in **hiccup**, ……. the main S.E is sedation & anticholinergic effect

N.B thioredazine ( **Melleril** 10 , 25 ) is also phenothiazine derivatives it is mainly used for **sedating & neuroleptics effect**

2- Sulpride (dogmatil )

3- Amisulpride ( solian ) 4- stabilon






- **Anti depressant drugs**
  1. Tricyclic antidepressant (TCA) as Imipramine (tofranil ) , Colmepramine (anafranil ) , Amitryptaline (tryptizole ) ,
  2. Tetracyclic antidepressant (benzodiazepam derivatives as Mirtazipine (rameron , mirzagen)
  3. SSRI (nontricyclic ) as Seroxate , prozac , cipram , cipralex , faverine , lusteral , **Valdoxine** للبحث .....
  4. SSNRI as effexor (venlafaxine ) , Prestiqu (desvenlafaxine ), cymbalta (duloxatine )






5-Atypical antidepressant as Maprotilin (ludiomil

Also other atypical drugs as nefzedon , trazedon , …….

- **Other types of antidepressant**
  1. Herbal antidepressant as St. John'worts (st. johns worts herb , procalmil ) ,…..
  2. Drugs has an other main indication as tegretol , depakine there main indication is anti epilepsy
  3. Lathium has main indication antimania but also has used as antidepressant



- **Other use of antidepressant drugs** :

1. Premature ejaculation specially anafranil , cipram , joybox , Legam (dapoxitene) , ……
2. Nouctornal enuresis specially tofranil
3. Neuropathic pain specially cymbalta (duluxatine ) & tryptizole ( amitryptilline )
4. Magrain as prophylactic specially tryptizole
5. As anxiolytic effect as in aspastic colon
6. P.M.S

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- **Anticonvulsants & anti epileptic drugs**
- **Epilepsy :** is medical condition that produce **seizures** that **affect mental & physical function** when person **has two or more seizures** considered epilepsy & produced by **abnormal electrical charge in the brain (**EEG)
- **Epilepsy : an abnormal electrical activity** lead to **loss of consciousness & abnormal movement & maybe** idiopathic epilepsy or symptomatic epilepsy

- **Idiopathic epilepsy** :there is no clear cause & need to chronically ant seizures
- **Symptomatic** : due to number of causes as illicit drugs use , tumor , head injury , meningeal infection, rapid withdraw of alcohol , hypoglycemia , ……
- **classification of seizures :**

**I_ partial seizures**

**II_ Generalized seizures**






**I_Partial seizures** : **only portion of the brain** , **only one lobe** & symptoms depend on site of neuronal discharge also partial seizures may be **simple or complex**

- **Simple partial seizures** : group of electrical discharge does not spread , patient does **not loss consciousness** , but abnormal activity in single limb , group of muscles , **occur in all ages**






- **Complex partial seizures : loss of consciousness** , motor dysfunction may involve ( chawing , diarrhea , urination ) & **occur in all ages**

II_ **Generalized seizures** : abnormal electrical **discharge through out hemisphere of the brain**

- **Tonic – clonic** (**grand mal seizures** ) **loss of consciousness** & violent muscle contraction where tonic ( continuous contraction), but






- clonic ( rapid contraction & relaxation ) phases , then **followed by period of confusion** , exhaustion due to glucose depletion
- **Absence seizures** : involve **brief** , **abrupt** & self limiting **loss consciousness** , **age 3 – 5 year till puberty age diagnosed by** (electro encephalogram EEG )
- **Myoclonic** : short episode of **muscles contraction** in **any age**






- **Febrile seizures** : in young children with high fever , consists of generalized tonic – clonic of short duration
- **Status epileptics** (recur ) means 2 or more seizures recurs without recovery of full consciousness between them ( long time may be 5 mints )






- **General mechanism of action** :
- Block of voltage – gated channel (Na or Ca ), .. ….. **enhance inhibitory GABAergic impulse** , &

**interfere with excitatory glutamate**

**Cl. Channel opening**

transmitting , the drugs suppress seizures but do not cure or prevent the epilepsy .






The anti epilepsy drugs in the market may be intravenous or orally

- **Anticonvulsant I/V** drugs that used to control the ongoing convulsive fit 1st line of these drugs are diazepam , phenobarbital ,
- midazolam & phenytion but 2nd line for refractory cases (lidocaine , phenobarbital , paraldehyde )






**Antiepileptic oral drugs** given for long periods ( long term therapy ) can be arranged in 2 **generation as following :**

- **1st generation** ; phenytoin , Valproic acid , Carbamazipine , phenobarbital derivatives ,
- **2nd generation**: gabapentin ,pergabalin , lamotrigin , topiramate , oxycarbimazipine , Leveteracetam (keppra ) ,…






## CNS

- Epanutin(phenytoin), Tegretol ( carbamazipine ) , topamax ( topramate ) , depakine( valproic A) , Neurantin (Gabapentin) , ( Lyrica , Nervax , prex 150 ,75 , (pergabalene ), trileptal (oxycarbamezipine ) , Lamical (Lamotrigine ), Keppra (levetiracetam ) , Lioresal ( baclofen ) , tiagabine (gabatril ) , sabril ( vigabatrin) , also other drugs can be used for epilepsy beside its anxiolytics effect as **phenobarbital (sominaletta )** ,

- **Phenytoin** : block Na , Ca also interfere with release of monoamineric neurotransmitters,
- Application treatment **status epileptics**
- Saling point bounded with plasma protein (albumin ) …. ,
- Liver inducing enzyme
- Long term application : **peripheral neuropathy** , **Osteoporosis** , **gingival hyperplasia**
- Fosphenytoin (cerebrex)Prod rug of phenytoin



- Cerebex available in I/M & I/V but phenytoin lead to damage of tissue
- **Pregabalin** may bind to Ca channel in CNS , the exact role in treatment is unknown ….Application of lyrica **partial seizures** , **Neuropathic pain** associated with diabetes , peripheral neuropathy, **post herpetic neuralgia**

**S.E** drowsiness , blurred vision , **weight gain** , peripheral edema , **addiction** ,






**Topiramate** several action (**broad spectrum** ) antisezures , it block voltage dependent **Na** channel , **increase frequency of Cl** . Channel opening by **binding the GABA** a receptor , may act at **glutamate** (NMDA ) site , …. **Application in partial & primary generalized epilepsy , Migraine , it is liver inhibited enzyme**

Lamictal with topiramate increase conc. of top.

S.E **aggressiveness** , **somnolence** , **weight loss** , renal stone , ( glucoma ) للبحث

- **Tegretol** block Na. channel ,…. application effectiveness in **partial seizures & secondary generalized Tonic – Clonic ( grand mal )** seizures , **trigeminal neuralgia , bipolar disease**
- **Not prescribe for absence seizures** للبحث
- **It liver inducer enzyme** ( Tegretol & Phenytoin)
- **Gabapentin** : it analogue for GABA but it does not act on it **, its action unknown** , application **…. Partial seizures** , **post herpetic neuralgia**






- it is **tolerated specially** by **elderly population** with partial seizures
- **Lamotrigine** block Na channel , Ca channel , application effective in **all types of seizures** , **partial seizures & absence seizures** also **bipolar disorder** , t ½ = 24 – 35 hour
- **it is tolerated specially** by elderly population with partial seizures
- **Increase its conc. Level may be life threating**






- ***Levetiracetam*** (Keppra ) is unknown mech. , application **partial onset seizures** , **myoclonic** seizures , **primary tonic – clonic (grand mal )** in adult & children ,
- S.E dizness , **sleep disturbance** , **headache** , **weakness** , ....
- Oxycarbazepine ( Trileptal ) , prodrug is Na channel blocker , used in adult & children in **partial seizures , absence seizures**






- Less effective on metabolic enzyme … **less potent inducer than carbamazepin**
- S . E nausea , vomiting , **headache** , **visual** disturbance
- **Broad spectrum** ant epilepsy are Topramate , Lamotrigene , Levetiracetam






- benzodizepam derivatives as clonazepam(rivotril )
- **Other use for antiepileptic's drugs**

1. Neuropathic pain tegretol , lyrica,neurontin ,
2. Magrain as topamax , tryptizol , phenytoin
3. Ms relaxant as lioresal
4. Hiccup as lioresal
5. With anti depressant drugs
6. Digitalis induced arrhythmia ( Phenytoin )

## CNS



- Frist aid for epilepsy patient :

- يترك هاديء ونطمئن من حوله
- لا تحاول وقف حركته
- فك كل الأشياء حول الرقبة
- ضع شيء مبطط وخفيف وناعم تحت الرأس وكذلك بالفم لو أستعطعت ولكن ليس بالقوة
- تضع الشخص في إتجاه واحد حتي تسمح له بالتنفس الطبيعي
- لا تحاول فتح الفم بأشياء حادة
- لا تجعل الشخص يبلع لسانه بمعني لا تدخل اللسان بالقوة



# CNs

- لا تحاول أن تعطيه تنفس صناعي أثناء التشنج إلا الذي أنتهي من التشنج وكان لديه مشكلة في التنفس
- لاحظ فترة حدوث التشنج حيث غالباً تستغرق من بعض ثواني الي بعض دقائق لا تزيد عن 5 دقائق
- لا يوجد بجوار الشخص أي أشياء صلبة أو حادة

Advice for some complication as:

- Falling ….. Break bone or injury
- Drowning …. As while swimming
- Emotional issue as depression , anxiety






- Pregnancy complication specially due to drugs
- Sudden unexplained death هذه لا نقولها

## Epilepsy risk factor

- Age : all age but childhood & after 60 year is more
- Family history
- Accident where head injury , ….
- Stroke & other vascular disease where affect on the brain
- Dementia can increase the epilepsy in older
- Infection in the brain
- High fever can lead to seizures in childhood






- **Anxiolytics drugs : therapeutic application**

- Hypnosis - sedation - Idiopathic Articaria , aspastic colon , P. M . S , Social fearing ...
- Barbiturates derivatives , - benzodiazepam derivatives but not apply , but the following molecules are used – **buspirone** - , **passiflour** , **Valeriana** , **Sleeping aid** , **Songanight** , also **sedating antihistamine** as diphenhydramine , doxylamine , dimenhydranate






- **Other sedating antihistamine** as, clemestine chlorphenramine maleate , dimethenidine , cyproheptadine , all sedating antihistamine mostly descriped once before bed time but , the herbal drugs described as the following ;

Valarina & pasiflour 2 capsules at begin of night & other 2 capsules before bed time but songanight & sleeping aid take 2 tab. Before bed time , all sedating may cause headach, nausea ,






- due to the sleep is not deep sleeping
- Also valerina mostly used for insomnia , but passiflour used in intermittent sleeping
- All antidepressant can be prescribed by specialist as anxiolytic






- **CNS. Stimulant drugs** : as amphetamine containing product ex. القات اليمني, …. ,….., ….., .also theophylline containing products , also nicotine , caffeine , tetrahydrocannbenol & datura , also lysergic acid but we study 2

I- **Non nicotine drugs :** Champix ( Varenicline ) , it is **alpha 4 B2 nicotinic receptor partial agonist** in the brain, start with champix for 12 week , extending therapy an additional 12 weeks






## CNs

- Help the patient to maintain abstinence & avoid relapse
- The starter pack 0.5 + 1 mg begin by 0.5 for 3 days in the morning then continue 0.5 twice daily for other 4 days then continue 1mg twice daily morning & evening till complete 12 weeks
- Smoking can continue for 1st 14 days






- **Side effect** of varenicline are the following :

1. Depression & mood change
2. Nausea & vomiting
3. Weight gain
4. Night mares

II- **Nicotinic drugs as** :

1. Nicotinelle patch 30 , 20 , 10 , used according to the smoker ( mild , moderate , sever






- Smoker ) where high smoker need to patch 30 & then decrease the concentration gradually

2- Nicotinelle chewable tab. Take 12 tab. /day

3- No Quit (No nicotine ) 2 mg , 4 mg where high smoker more than 20 cigarette use 4mg in the 1st week every 2 hours , in the 2nd week every 4 hours , in the 3rd week every 8hours but if smoker less 20 cigarette use the conc. 2 mg by the same dose in conc. 4 mg






- **Other drugs used** for stop smoking as Bupropion (**wellbutrin )** which has **different uses** as (antipsychotic effect , antidepressant , stop smoking , also used in slimming as appetite suppression ,
- Bupropion act on adrenaline , serotonin & dopamine
- In stop smoking : begin by 150 mg once daily for 3 – 7 days then 300 mg divided in 2 dose till stop smoking للبحث لو هناك ما يفيد العمل

- **Alzheimer is neurodegenerative** disease is characterized **by loss of cholinergic neuron then, loss of memory**
- **It is :** degenerative brain process that produce dementia or senility ( **senile dementia** ) may be due to accumulation of type of protein (beta amyloid protein ) lead to degeneration
- **Alzheimer is type of dementia** , causes problems with memory , thinking , behavior & symptoms develop slowly & get worse overtime



- But dementia is brain related disorder caused by different disease
- **Alzheimer drugs** include the following

1. ACHE inhibitor : used for treatment mild to moderate dementia  ex. **Exylon** (rivastigmine 1.5 , 4.5 mg tab. , patch , arisept (donepezil ), kemadrin (procyclidine ) ,






- **Reminyl** (galantamine ) **the dose 5 mg** before sleeping can be increased after one month to 10 mg
- S.E of ACHEI : are , nausea , vomiting , anorexia , **diarrhea** ,fatigue , dizziness , **Abdominal pain** , muscle cramp , dyspepsia , headache , **somnolence , insomnia** , **sweating** , tremor & syncope






- **NMDA receptor antagonist** : NMDA is (one of glutamate receptors ) the stimulation of these glutamate receptors appear to be critical for formation of certain memory
- Also NMDA is one of glutamate receptor which responsible for memory & learning





- But over stimulation of the glutamate receptors specially NMDA lead to neuro degenerative effect
- drug ex. **Ebixa (Memantine )** where ebixa act on NMDA receptor improving the transmission of **nerve signals** & memory
- **Ebixa used in moderate & severe alzheimer**
- Dose of ebixa 1$^{st}$ week 5mg (1 tab.) daily , 2$^{nd}$ week 5mg / 12 hour , 3$^{rd}$ one tab. In morning






- & half tab. After noon

, 4th week & continous twice daily

- **S.E of ebixa** : **constipation** ,stomachache dizziness, headache**, & somnolence** ,
- **dextromethorphan** increase severity of S.E
- **Other drugs considered** as support drugs also *prescribed to inc*rease the memory as phosphorus containing drugs as phosphogengal , Gincobiloba as memorex , arcalion ,Antioxidant , folic acid, L carn.

| | Alzheimer's | Dementia |
|---|---|---|
| Nature | Progressive Brain Dysfunction | Progressive Brain Dysfunction |
| Relation between both | Alzheimer's is a type of dementia. But it is the most commonly found type. | Dementia is a brain related disorder caused by other diseases. |
| Duration | Avg. of 8 - 12 years | Permanent damage but in stages |
| Age wise Occurance | Normally found after 65 years of age; risk doubles every 5.5 years | Only after 65 years. |
| Spread by | Inheritance (not limited to preceding generation alone) | Age related |

# Patient education for Alzheimer family :

- **Create save environment** : where it impairs judgment & problem solving skills as prevent falls , **use locks on dangerous materials , medicine , dangerous tools** & utensils , **water temperature** , **take fire safety precaution** , **smoking** with supervision ,
- **Reduce the frustration** : as take **his time , limited choice** , schedule wisely , reduce all destructions , as different voice , television , ….
- **Be flexible with him**



# Other Patient education for Alzheimer family :

- simple tips for daily task
- **Can advice also by supplementation** as phosphogengal , Gincobiloba as memorex , arcalion ,Antioxidant , folic acid, acetyl L carnitine & tourin as in Exotique






- **Parkinson's is neurodegenerative disease** associated with **loss of dopamine neuron** & characterized **by disorder of movement** (tremor , rigidity , bradykinesia i.e. slowing in initiating & carrying out of voluntary movement
- Parkinson's drugs include the following

1. **Anticholinergic** products used for symptomatic treat. of Parkinson's including






- extrapyramidal syndrome induced by drugs such as phenothiazines
- drugs ex. **Cogentin (benzotropin 2 mg** ) , parkinol (trihexphenidyl 5 or 2 mg ) ,
- akineton (Biperiden 20 mg ) **tertiary amine** anti muscarinic uses similar to **parkinol**
- Dose mostly 2 mg 3 time daily but biperiden dose can increase till maximum dose 16 mg /day **also can be use promethazine(**histaloc ) ,& promantine

- **S.E atropine like effect** , also drowsiness may be severe specially in benzoatropine drug
- **abuse** of parkinol due to its **euphoric effect**

❖**Dopaminergic & other mech. drugs** ex.

- Sinemet (levodopa with carbidopa 1:10 ) levodopa is immediate **precursor of neurotransmitter of dopamine** but it is rapidly decarboxylated & become inactive before enter the brain so






- , So carbidopa is mixed in the same preparation where it is decarboxylase inhibitor
- **The dose 1 tab./day  Increase gradually to 2 or 4 tab./day**
- **Comatan (entacapon )** is selective , reversible peripheral inhibitor **of catechol-O-methyl transferase** (ComT) , an enzyme involved in metabolism of dopamine & levodopa
- **Stalevo is combination** of (Sinemet +Comatan






- S.E **nausea** , **vomiting** , **constipation** or diarrhea , **dry mouth** , dyskinesias, also comatan is C.I in phaeochromocytoma
- **parlodel ( Bromcriptine ) ,dopergine (lysuride )** dopamine agonist associated with dopamine depletion there for used in parkinson's
- S.E : G.I Nausea , vomiting , constipation , C.V postural hypotension (syncope ) specially after initial dose





- , CNS side effect confusion & hallucination
- **sifrol (pramipexole )** is dopamine agonist with action similar to those of bromocriptine
- peka merz ( amantadine ) أتوقع مثل البارلوديل وللبحث
- **Selegiline** (tonus – jumex ) is selective inhibitor of MAO type B used in **early stage of** Parkinson's also can be used as adjuvant **treatment with levodopa**






# Patient education with Parkinson's disease

- In Parkinson's ask **about the constipation**
- **keep the balance** by slowly when change the position , when arising from the bed wait some time, **stand with support cane has large rubber tip**, also when stand the feet slight apart
- **Decrease the reflexes** by decrease the stimulation & decrease the attention , destruction
- **In Waking must avoid shoes with rubber sole** & not carry objection in hands & arm freely for balance

# Patient education with Parkinson's disease

- Awareness in car
- Also can use yoga exercise






## Gonadotrophin containing drugs

- **Gonadotrophin hormone** : The name is due to secreted from gonadotrophin cell in the anterior pituitary & due to its role on gonads
- The gonadotropins hormones are FSH & LH
- Role of gonadotropin hormones are :
  1. FSH stimulate gametogenesis & follicular development in female
  2. Also stimulate spermatogenesis in men
  3. LH stimulate androgen production by follicle






1. 3- LH induce the ovulation
2. 4- FSH stimulate androgen conversion to estrogen

- The drugs classified to 4 class (HMG & HCG ,...

1st group is HMG (human menopausal gonadotropin ) drugs its source is urine of postmenopausal women & include - containing FSH + LH by the same conc. (75 I.U) extracted from post menopausal urine ex. Menogon , Marional , Humegon ,

2-Urofollitropins drugs containing only FSH is named as urofollitropin & extracted from postmenopausal urine but purified extraction i.e free from LH ex. Metrodin , Fostimon , Brevella

3- Synthetic follitropin drugs containing only FSH but by RNA or DNA recombinant gives FSH of glucoprotein series of alfa or beta subunit Ex . Gonal F( Alfa follitropin ) purgon (betafollitropin)

**– The main application is treatment of infertility**





## Gonadotropin containing drugs

- In course 7- 12 day ( daily use ) from 75 to 300 IU till follicle development may above 14 mm
- تستعمل حديثاً في التلقيح الصناعي in vivo fertilization
- تستعمل أيضاً في الحقن المجهري in vitro fertilization

4th group is HCG (human chorionic gonadotropin ) drug is extracted from urine of pregnant women where it is secreted from placenta gives identical LH , Ex. Profassi , pregnyl , choriomon ) , halflife 8hours ,

Also Synthetic DNA recombinant as **ovitrelle** 250mg






- **The application clinically :**

1. Induce ovulation most use 5000 IU s/c, i/m
2. luteal phase is maintained with 1500 IU every 3 days for 12 days
3. Undescended testicle 500 IU 3 time /week for 6 week
4. Spermatogenesis problem & androgen def.






## GnRH analogous or gonadorelin or cytostatic GnRH analogous

- Ex. Triptorelin (decapeptyl ) , buse relin (super fact ) , goserelin ( Zoladex ) this group of drugs has - stimulation action in deficiency cases & - inhibition action by negative feed back mechanism example in over secretion cases due to cancer problem
- Decapeptyl injection available in :

- Aqueous form (7 syringe 0.1 mg ) mostly prescribed once daily s/c or I/m most case is infertility

## GnRH analogous or gonadorelin or cytostatic GnRH analogous

- Depot form one syringe 3.75 one injection I/m every month most used in prostatic cancer
- if the concentration increase to 22.5 mg will be used every 84 to 90 day but if the conc. is 30 mg will be used every 4 month
- Ex. For stimulation application :
  1. Infertility
  2. Delayed puberty
  3. Hypogonadism






## GnRH analogous or gonadorelin or cytostatic GnRH analogous



- Other Ex. For inhibition (suppression effect ) :
  1. Prostatic cancer
  2. Endometriosis تدعي البطانة المهاجرة وهي مثل الوحمة تتكون في أي مكان
  3. Uterine fibroids
  4. Early puberty (central precocious puberty )
  - **Cetrotide 0.25 mg = cetrorelaxin acetate**
  - Action of cetrotide is inhibition of LH- RH there fore **used to prevent premature ovulation** which is undesirable during hormonal treatment






# Insulin

- **Definition**: insulin is polypeptide hormone consisting of **2 peptide chains connected** by **disulfide bonds**
- **Secretion** : insulin secreted by beta cell of pancreas ( islet of Langerhans's )
- **Regulation** the secretion of insulin through :
  1. Blood glucose level
  2. Incrtin intestinal hormones






- **Sources of insulin** :
  1. Extraction insulin from pork (pig ) , beef (cow )
  2. Human insulin is produced by DNA technology using special strains of E.Coli , or yeast
  3. **Recombinant human insulin analogue** this new generation of insulin produced by **modification of amino acid sequence of human insulin** or change in some amino acids & produce insulin with different pharmacokinetics properties as shorter duration of action & faster onset of action

# Insulin

- ex. Lispro ( lysine & proline )
- Other ex. Insulin aspart (novorapid ) (asparic acid & proline ) ,  insulin glulisine (apidra )
- Also produce long acting insulin & slow flat level ( No peak ) ex. Insulin glargine ( lantus ), insulin detemir ( levemir ) , …..
- **Insulin administration** : insulin is polypeptide hormones degraded by gastric juice there for insulin administration through S/C injection






- But short acting regular insulin can be used I/V injection in emergency cases (hyper ketoacidosis ) ex, actrapid , humulin R ,…
- **Adverse effect** :
  1. Hypoglycemia
  2. Weight gain
  3. Allergic reaction but by human insulin this S.E decreased
  4. Reaction at site of injection ( lipodestrophy ) i.e






- Lipodestrophy leadto ( hypertrophy or hypotrophy) , also Renal insufficiency may require to adjust the dose
- Insulin preparations in the pharmacy : according to duration of action & according to the company & it is turbid or clear insulin

1. **According to duration of action**
   - ❖Regular = body insulin = short acting insulin
   - ❖Rapid acting insulin = ultra hort insulin






## Insulin

- ❖ Intermediate (NPH ) = Isophan insulin
- ❖ Long acting insulin
- ❖ Mixed insulin

➢ Regular insulin it is soluble crystalline insulin as the body there fore named body insulin where ; onset of action after 30 mint to 1 hour ,the peak after 3 – 4 hours , its duration from 7- 8 hour there for must be prescribed before meal by half hour ex. Actrapid , Humulin R






## Insulin

- Rapid acting = ultra short insulin : its onset of action from 10 mint to 20 mint , its peak from 1 hour to 2 hour & its duration of action from 2 hour to 5 hours there for can be prescribed before meal or after meal directly ex. Novorapid , homolog lispro , apidra
- Intermediate insulin (NPH ) Neutral protamine hagedorn = Isophane insulin this type is soluble crystalline insulin combined with






protamine at neutral PH give suspension of turbid insulin , this turbid suspension insulin is intermediate in its duration of action due to delayed absorption because of its conjugation with protamine , its onset of action from 1hour to 2 hour , its peak from 4 to 8 hours , its duration of action is 12 hours therefore it is prescribed every 12 hours

Ex. Insulatard , Humlin N






## Insulin

- Long acting insulin : this type of insulin long duration of action **but without peak** but prolonged flat level , ex. In the pharmacy :
  - Lantus ( insulin glargine ) its duration is 24 hours , the long duration of action due to isoelectric point of insulin glargine is lower than that of human insulin this leading to insulin is clear in vial but precipitation at the






, site of injection , there fore extend its action & has flat prolonged hypoglycemic effect & also due to change in sequence of amino acid series

- Levemir (Insulin detemir ) duration is 18 to 24 hours , by addition of the fatty acids side chain , this enhance association to blood albumin , then slow dissociation from albumin result in long acting effect , also change in sequence of amino acid series






# Insulin

- Insulin lent is 3rd type of long acting insulin it is insulin zinc suspension

➢ Insulin combination ( Mixed insulin ) = biphasic insulin it is combination of intermediate insulin with short acting insulin , i.e gives the 2 effect rapid onset, short acting effect & intermediate effect there for prescribed every 12 hours ex. Maxitard , Humulin 70/30 , novomix , homlog mix , .....






2 . preparation of insulin according to the company & the insulin is turbid or clear insulin:

- Clear insulin

1. Novonordesk company

Actirapid

Novorapid

Levemer






## Insulin

II- Lilly company

Humulin R

Humolog lispro

III- Avents company

Apidra

Lantus

- Turbid insulin

I- Avents  no turbid insulin






# Insulin

II- Lilly company

Humulin N

Humulin 70/30

Humulin lent

Homolog mix

III- novonordesk

Insulatard

Mixtard

Novomix






# Insulin

- different types of short acting & rapid acting
  - Actirapid
  - Novorapid
  - Humulin R
  - Humolog lispro
  - Apidra
- Different types of intermediate insulin
  - Insulatard ( NPH )
  - Humulin N(NPH )






- Different types of mixed insulin
  - Mixtard
  - Novomix
  - Humulin 70/30
  - Humolog mix
- Different types of long acting insulin
  - Lantus
  - levemir
  - Humulin lent






- Different packaging :

Vials , pen fill (cartridge ) , disposable pen ( flexipen , solostar , optisite )






# Oral hypoglycemic

- Insulin secretagogues
  - Sulphonylurea
  - Meglitinide
- Insulin sensitizer
  - Thiazolidendione
  - Biguanide
- Alpha glycosidase inhibitor
- Dpp-IV ihibitor drugs
- Incretin memic drugs ( injection )






- Insulin secretagogues: promote insulin release from beta cell of pancreas through ATP – sensitive K channel blocker ……… Beta cell membrane depolarization ………… Calcium influx ……… which result in pulsatile insulin exocytosis ( I.e insulin secretion to circulation )

Other effect but not mainly as reduction of hepatic glucose production , increase in peripheral insulin sensitivity






- Insulin secretagogues
  - Sulphonylurea

- glibenclamide as daonil , frequency of dose is twice daily take before meal by 15 mint

- Gliclazide as dimicron take twice daily , dimicron MR take once daily before meal , glaze 80

- Glipized as mindiab & sucrazide take twice daily before meal & **it is more suitable for kidney problem**

- Glimipride as amaryl take once daily before meal , Piramyl 6mg ,



- The main side effect of sulphonyurea are
  - Hypoglycemia
  - Weight gain
  - Precaution with hepatic & renal insuff.

- **Meglitinide** not sulphony urea but has  the action of sulphonylurea , &  it is suitable for **sulphonylurea sensitivity patient** , & **kidney insuff** . Meglitinide as nateglinide , repaglinide (novonorm 0.5 , 1 , 2 mg )






- Also it has rapid onset & short duration of action , it categorized as **postprandial glucose regulator** , it can combined with metformin , or piaglutasone but not with sulphonylurea , novonorm **take before meal or with meal 3 time daily** , the same side effect of sulphonylurea but less severity (hypoglycemia , weight gain )






- insulin sensitizer
  - Thiazolidindione as piaglutasone ( Actos ) increase the **insulin receptor sensitivity** ……… increase the action of secreted insulin …….. Decrease the blood glucose level , actos **prescribe once daily** , the main side effect is **Edema , headache** , **risk of hepatotoxicity** in 1st 14 day of using & **hemolytic anemia & may be urinary blader cancer**, some delisted drugs of this group as rosglotisone ( avandia ) lead to **arrhythmia**
  - **Biguanide as** metformin has the different action :




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# Oral hypoglycemic

1. Decrease the absorption of glucose from small intestine
2. Decrease the of hepatic glucose production
3. Increase peripherally utilization of glucose
4. Also has some insulin sensitizer effect

Metformin as glucophage has different conc. As 500 , 850 ,1000 mg prescribe 3 time daily after meal , but conc. 750mg xL prescribe twice daily






- Also metformin available in conc. 250 mg as in melbin , metformin take after meal
- **Different application** of metformin are :

1. Blood glucose level regulator in diabetic patient
2. Slimming there fore it is good choice in obese diabetic patient
3. Also used in polycystic ovary






- The main side effect of metformin :

1. GIT disturbance as nausea , gastric irritation , may be flatulence , may be mild diarrhea
2. **Headache** , N.B ant androgenic , renal pro للبحث
3. In over dose may lead to **lacto acidosis**

- **Alpha glycosidase inhibitor** : inhibition of this enzyme ……… inhibition for glucose absorption ………. Decrease the blood glucose level






- Alpha glycosidase inhibitor as acarbose in glucobay 50 mg , 100 mg , glucopay prescribe 3 time daily before meal
- Different application

1. Decrease the blood glucose level in diabetic patient
2. Also used in slimming

- The main side effect of acarbose are :

Flatulence & mild diarrhea






- DPP-IV inhibitor drugs (dipeptydyl peptidase no. IV inhibitor drugs ) ex. Sitagliptin (Januvea ), 100 mg , vildagliptin (galvus 50mg ) ,sexgliptin (Onglyza) these drugs inhibit incretin intestinal hormones ( GLp , GIP ) breaks down ……. Which potentiate insulin secretion & suppress release of glucacon secretion by pancreas , lead to hypoglycemic effect ,






# Oral hypoglycemic

- These drugs prescribe once daily with or without food
- **The main side effect are** :

**Pancreatitis** , hypoglycemia , **peeling , & red skin** rash (skin leshin) , also may occur fever ,sore throat , diarrhea , abdominal pain

➢ combination oral hypoglycemic

Glucovance ( Metformin + glibenclamide ) , daonil M ,






## Oral hypoglycemic

- Junoveamet, gliptinmet & galvusmet

Junoveamet ( sitgliptin + metformin )

Galvusmet ( vildagliptin + metformin )

- Incretin mimic drugs used mainly for slimming through decrease the appetite ex. Exenatide , victosa & bieta injection للبحث






- **Diabetes mellitus** is metabolic disease characterized by hyperglycemia from defects in insulin secretion , insulin action , or both
- **Types of diabetes mellitus**
  - Type 1 diabetes mellitus ( typ1 DM )or insulin dependent diabetes
  - Type 2 diabetes mellitus (type 2 DM )
  - Gestational diabetes ( GDM )
  - Other specific type diabetes






- **Type 1 diabetes mellitus** ( typ1 DM ) this type resulting from **beta cell destruction** which may be due to **immunological reaction** (one of the cause ) , the destruction of beta cell resulting in absolute stop of insulin secretion , **& the C. Peptide test is negative** , this type represent (accounts ) 5 – 10 % of diabetic patient , **insulin is only treatment** of this type
- **Type 2 diabetes mellitus** (type 2 DM ) this type

Due to **decrease** in insulin secretion or **increase insulin resistance** (decrease insulin sensitivity ) , this type2 represent (accounts ) 90 – 95 % of diabetic patient

- Factor affecting in development of typ2 DM or predisposing factor , Risk factors
  - Ethnicity العرق , environmental factor ,
  - Obesity ,
  - diet & in activity
  - Family history



- **Gestational diabetes** ( GDM )

*this type in pregnant women with varying degree of severity

*represent 2.5% of pregnant women develop GDM ,

*all pregnant women with diabetes treated by insulin

*GDM disappear in most women after delivery but about 10 – 15 % of them go to develop type 2 DM

* Pathogenesis of GDM , pregnancy produce transient insulin resistance ……. Postprandial hyperglycemia ,






* pregnancy hormones …… interfere with action of insulin on insulin receptor , also the cortisol & progesterone are the main culprits المذنب الرئيسي

* also increase the fat deposit during pregnancy decrease the insulin receptor sensitivity






- **Other specific type of diabetes** due to disease of exocrine pancreas , drugs or chemical induce diabetes treatment of aids , after organ transplantation

**Pathogenesis & onset of diabetes :**

* All predisposing factor ( obesity , genetic suscep ….. ) …….. Increase insulin resistance …….. Hyperinsulinmia …….. Beta cell exhaustion & diminished ……… Hypoinsolinmia ………… diabetes type 2






- Common symptoms of diabetes mellitus

*polydipsia , polyphagia , polyuria

*Extreme tiredness ( lack of energy )

*Sudden weight loss

*Slow healing of wounds

*Recurrent infection

*blurred vision






## ➢ Some important measures :

General measure fasting blood glucose level is 70 – 110 mg dl للمراجعة

But specific measures classify the people to 3 group ( Normal group , pre diabetic i.e. group of high risk of diabetes , diabetic group ) these measures are the following :

- Fasting plasma glucose level (FPG ) must fast for 8 – 12 hours can take water only






# Optimum diabetes management

≤ 100mg/dl(desliter) is normal but

≥ 126 mg/dl is diabetic but the read between 100 & 126 is the 3rd group ( high risk group )

- Oral glucose tolerance test (OGTT ) must take 75 gram of glucose then measures after 1 h , 2 h , …. These results after 2 hours postprandial

≤ 140 mg /dl is normal but

≥ 200 mg / dl is diabetic but the read between 140 &200 is the 3rd group ( high risk group )




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- HBA1C = glycated or glycosylated protein test , this test reflects the average of blood glucose level through the last 3 month I.e. measure the degree of glucose level around the normal

≤ 5.7 mg/dl is normal but

≥ 6.5 mg/dl is diabetic but the read between 5.7 & 6.5 is the 3rd group ( high risk group )

- N.B mg /dl = mole /dl * 18






- Steps for management of diabetic patients
  - MNT (Medical nutritional therapy )
  - Physical activity
  - Medication
  - SMBG (self monitoring blood glucose )
  - Diabetes education
- **The aim of optimum management of diabetic** patient to control short term complication (acute complication ) & also long term

Long term complication (chronic complication) & **increase the trust (Rapport )**

**1st Short term complication**(acute complication ) this include hypoglycemia or hyperglycemia & comma , diabetic hyper ketoacidosis……. acidosis ……..increase the osmolarity …….. Dehydration ……...shock

Hypoglycemia controlled by glucose & glucagon injection






but in hyperglycemia & hyper ketoacidosis …

the shock phase is controlled by glucose

& I/V suitable fluid & regular insulin I/V

then post acidotic phase by initiation of oral feeding , calculation of insulin dose required then life long management by apply last steps

**2nd Long term** (chronic complication) include

- Macro complication
- Micro complication





- Macro complication problem in large blood vessels & include :

*coronary stroke & heart problem this is high risk of death in diabetic patient

*cerebrovascular problem less risk than in hypertensive patient i.e. more dangerous in B.P

* Peripheral vascular problem this lead to

❖ sexual dysfunction ,

❖diabetic foot






- Micro complication problem in small blood vessels & include :

❖ Retinopathy

❖ Nephropathy

❖ Neuropathy

There fore the steps for management of diabetic patient & counseling is very important & as the following : **1st MNT this simply by healthy plate**






- **Healthy plate ( My plate** ) …… ½ plate vegetable without starch & fruits + ¼ plate roasted protein + ¼ plate starch or grains also can use cup of free fat milk

**2nd is physical activity** : is very important but the blood glucose level not less than 100 mg/dl & not increase than 250 mg / dl before begin the physical activity , NB **Aerobic physical activity**

**Types suitable** are walking ,swimming , bicycle ….






- **The importance of physical activity** : the regular & mild to moderate different exercises has the following importance :

1. Decrease the beta cell exhaustion by the following decrease insulin resistance & increase insulin sensitivity , increase glucose utilization , also decrease glucose production from the liver , all this decrease blood glucose level …… decrease insulin secretion






# Optimum diabetes management

1. Improve HBA1C level
2. Change in body weight to reduce cardiovascular risk & hypertension problem
3. Improve lipids & carbohydrate metabolism this lead to decrease the **LDL** & increase HDL this **decrease the hyper cholesterol**
4. Physical activity treat **osteoporosis**
5. Increase joint flexibility , Muscle strength ,
6. Decrease anxiety , depression , …..
7. Good effect on colon ….Treat the constipation

## Optimum diabetes management

- **3rd SMBG** : management tools & education tools also it is **reliable** , **fast** , **portable** , as or more acceptable than lab. , also patient can adjust & or plain the medication , exercise & meal , also through SMBG can improve A1C **where decrease A1C by 1% decrease complication by 50- 60%**

* Type1 specially children &GDM measure 7 time

- **4th the medication** explained last






- **5th step is very important education of** diabetic patient about the following :

❖ **type of injection** S/C but hyper ketoacidosis Ergent case inject regular insulin I/V

❖ **Site of injection** abdomen Right & lift , arms right & lift , thigh right & lift , buttocks right & lift , & the change every 3- 6 days from right in abdomen then to arm then to thigh then to buttocks then abdomen & repeat






- **Pinch up** : yes but without the muscle it is necessary in long needle
- **Angle 90 or 45** according to long of needle i.e. not inject I/M but S/C injection
- **Insulin storage** : * vial , pin fill & pen opened or on use storage at ≤ 25 degree for 1 month but in refrigerator 2- 8 degree for 3 month

* vial , pin fill & pen closed or not used keep in refrigerator 2- 8 degree till expiry date






***Insulin no freezing where lead to denaturation**

***Insulin above 35 degree lead to denaturation**

- **Precaution during using or application of** Insulin are the following :

1. If clear insulin & turned to cloudy
2. If expiry date is finished or expired
3. If insulin is frozen or exposed to high temperature 35 – 45 degree






4- Insulin is discolored

5- After initial shaking of turbid insulin & there is deposit , flakes or lumps  in insulin but must be homogenous

6- after injection of insulin still 6 second

7- shaking of insulin firstly between the palm of hand then by one hand in one toward for several time






- **Correction formula** : this used to adjust the quantity of dose of insulin depend on

**insulin sensitivity factor ( ISF )**

ISF = 1800/total daily dose (TDD) of insulin

Ex. If TDD of insulin = 60 IU & we need to change the blood glucose level from 190 to 120

Solution : ISF = 1800/ 60 = 30IU

190 – 120/ 30 = 70/30 = 2.5 IU

End result we will increase the dose by 2.5 IU




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- **All diabetic patient** considered diabetic foot
- One of macro vascular peripheral vascular complication
- **Causes** : vascular problem , ischemia , metabolic alteration
- **Types** of diabetic foot :

- Neuropathic ulcer 70% of cases no pain but has blood supply high result of treatment






- Ischemic ulcer 15 – 30 % pain but no blood there fore the result of treatment is week
- Nero- ischemic has the 2 defect no pain & no blood supply
- **Steps occur in diabetic patient** : ischemic …… then red color ….. Then …… black color end by gangrene ( dry gangrene , wet gangrene , gas gangrene ) the dangerous one is gas gangrene
- Charcot joint شاركوت 8%






# Diabetic foot

- it is neuropathic-osteo arthropaty






## ➢ Counseling & advice

- Stop smoking due to peripheral construction
- Inspect feet daily
- Use mirror to sure that feet free from any wound or ulcer
- Check between toes
- Dry between toes
- Use moisturizer free from alcohol daily






# Diabetic foot

- قص الأظافر بشكل مستقيم وعدم قص الأركان
- إرتداء شراب طبي فاتح قطني
- عدم إرتداء الأحذيه الغير مناسبه مثل الكعب المرتفع
- فحص الحذاء comfortable diabetic shoes
- إمتنع عن المشي حافياً barefoot
- لا تجلس علي الأرض طويلاً حتي تمنع keratosis
- ممنوع الكوي أو إستعمال اي keratolytic تحت الركبة
- Liquid hydrogen used in callus






## Diabetic foot

- الجروح غسل بالماء والصابون ثم المسحات الطبية ثم المضاد الحيوي ثم التغطية لمنع الماء
- جرح مريض السكر يجب أن يبدأ الألتئام بعد 3 أيام وإذا زاد عن ذلك فيجب تحويله لأخصائي
- بعد 3 أسابيع يجب أن يكون قد إلتئم تماماً وخلاف ذلك يجب أن يحول لأخصائي






# Systemic corticosteroids

- **According to the duration of action systemic** corticosteroids there are
  - **Short acting** its duration 4- 6 hours & prescribe 3 time daily after meal ex. hydrocortisone , prednisolone as (prednisone 5 mg tab., predo 15 mg /5ml , methyl prednesolone ( medrol , urbasone )
  - **Long acting** its duration of action 8- 12 hours & prescribe every 12 hours after meal






## Systemic corticosteroids

- Examples for long acting corticosteroids dexamethasone 4mg (oradexon ) , betamethasone 0.5mg ( betasone , celestone
- **Inhalation (surface active corticosteroids )** include the following beclomethasone (beclasone , rhinoclinil,….. ) , budesonide (pulmicort , symbicort , rhinocort aqua,…. ), fluticasone (flixotide , serotide , flixonase , …), ciclesonide ( alvesco )






## Systemic corticosteroids

- All inhalation or surface active corticosteroids must advice by mouth wash after using it to decrease ( oral candidiasis ,sound hoarseness )

➢ **According to the dosage form** , tab. , surface active form , supp. & parental dosage form

- Supp. As budesonide supp. Used for ulcerative colitis , & crons disease
- **Parenteral corticosteroids** : are used in acute life style threating condition ,






## Systemic corticosteroids

- **Life threating condition** as acute severe asthma, severe allergy ( urticarial , serum sickness & transfusion reaction ) **examples for parenteral** corticosteroids , **hydrocortisone** (solucortef , hydrocortisone amp ) , **methylprednisolone** (solu medrol , depo medrol ) , **dexamethasone** ( decadron , dexamethasone , forticortin ) , **triamcinolone** (kenacort ) , **betamethasone** (celestone , diprofos )

## Systemic corticosteroids

- **Diprofos** is parenteral corticosteroids betamethasone diphosphate rapid onset short effect & betamethasone dipropionate late onset effect & long effect  this parenteral is prescribed  at least every month & above may be every 3 month
- **Tetracosactide or Tetracosactrin (synactin )** synthetic polypeptide identical in 1$^{st}$ part series of amino acid to  corticotrophin (ACTH )





**Synactin** stimulate the adrenal cortex to secrete the natural cortisol

Indication mainly **diagnosis of adrenal cortex insufficiency** or to **detects** the adrenal cortex function

S.E : rarely occur as the following redness at the site of injection , rash , itching , flushing , dizziness , nausea , difficult breathing , swelling of face , lip & tongue






- **Role of corticosteroids** : **are potent anti-inflammatory** through inhibition of *prostaglandin synthesis through inhibition of arachidonic acid formation , , **inhibition the release of already formed prostaglandin** ,

*inhibition of cytotoxin & other allergans

*Inhibition of interleukin formation by monocyte

* **Increased synthesis of beta** – adrenergic receptors with the resultant **increase in catecholamine activity** للبحث



## Systemic corticosteroids

- **Relative potency** of different drugs has corticosteroids N.B. hydrocortisone and aldosterone are principal hormones normally produced by adrenal cortex , hydrocortisone (cortisol ) has the following effect - glucocorticoids ……… Anti inflammatory effect ,mineralocorticoids …….. Salt retaining effect
- **The potency for anti inflammatory effect** where prednisone **5 time** as hydrocortisone






- …. While the sod. Effect is slightly less than that of hydrocortisone ( about 0.8 )
- **Dexamethasone & betamethasone** anti inflammatory effect is 50 times as that of hydrocortisone while sod. Retaining effect is negligible
- **Side effect of prolonged steroids therapy** : short term of steroids for few day 3- 5 days no side effect but prolonged use as the following






## Systemic corticosteroids

1. Growth retardation especially in growing child
2. Cushing syndrome (buffalo & hump , moon face , hirsutism ,acne , stria
3. Hypertension
4. Potassium depletion
5. Wasting of the muscle
6. Osteoporosis






Other side effect of corticosteroids

1. Salt retention (edema , weight gain )
2. Flaring of infection ( bacterial , viral ..... )
3. Peptic ulcer
4. Sudden withdrawal after prolonged use lead to acute adrenal failure
5. Hyperglycemia
6. Immunosuppressive effect






- **Patient education, precautions & counseling** for patient take corticosteroids for long time

1. High protein diet to prevent muscles wasting
2. High calcium supplementation to prevent osteoporosis
3. High supplementation of vit. B, vit D due to deficiency by long term of corticosteroids
4. Fresh orange ,banana juice or pot. Supplementation or ORS to compensate pot. Depletion (hypokalemia )

- **Other counseling for long term of cort.**

1. Infection should be diagnosed early to be treated
2. Protect the stomach by using corticosteroids after meal or using H2 blocker or PPI
3. Periodic monitoring of blood pressure , blood glucose , growth(length ) specially in children ,weight gain
4. Sudden withdrawal should be avoided






- **Other precaution**

1. Corticosteroids regimen gradually increase & gradually decrease
2. Can apply alternative – day therapy , or every other morning dose 6-8 a.m every other day

N.B hyperkalemia more dangerous than hypokalemia therefore the advice is ORS or fresh juice specially banana juice






**Hypertension, or high blood pressure**, is defined as a reading of the blood pressure above 140/90 on three consecutive measurements at least six hours apart. The definition varies for pregnant women, where hypertension is defined as 140/90 on two consecutive measurements six hours apart. Consistently high blood pressure causes the heart to work harder than it should and can damage the coronary arteries, the brain, the kidneys, and the eyes. **Hypertension is a major cause of cerebral stroke**.






## Classification of blood pressure level :

- Normal BP 120/80 systolic BP mmHg / diastolic
- High normal BP 120-139/80-90 & high B.P 2 stages
- Stage 1 moderate hypertension 140-159/90-99
- Stage 2 sever hypertension 160 & above /100 &above






- **Types of hypertension**
- **Primary ( essential ) hypertension** more common 90 – 95 % of cases the cause is **unknown** though genetic factor , obesity , lack of exercise , excess of sodium intake , hypercholesterolemia , smoking are predisposing factors






- **Secondary hypertension** less common 5- 10% of cases as result of **renal diseases** , **endocrine** diseases , **vascular diseases** or **toxemia of pregnancy** , thyroid problem , liver , heart , ……






- **Complications of hypertension :**
- Cerebral complications
- Ocular complications
- Cardiac complications
- Renal complications
- **Factors increase the blood pressure** (patient education or advise )
- Nervousness & anxiety
- Alcoholic drinking



- High amount of salt & fat
- Increase the weight & fatness
- Smoking
- Some diseases as kidney, liver , heart & thyroid disease , also diabetes
- Genetically or hereditary factors
- Due to certain drugs ( steroids, corticosteroids , carbnoxolone, , NSAIDS), & drugs interaction






- Due to hormonal disturbance
- Increase the age also due to unknown causes
- **Symptoms** : high blood pressure may be without symptoms therefore can be called the **silent killer** but if the following symptoms appear must advice the patient to measure the blood pressure ( **continuous or repeated** headache , epistaxis , problem in the vision , sweating , drowsiness , increase the heart beats ,

- tired from any effort , increase the breathing
- **Counseling for hypertensive patient** : control the weight , decrease the fatty diet , decrease the salt or use potassium salt , do not use alcoholic beverages , do not smoke , good life style ( suitable exercise , rest , good & suitable diet ,... ) , no nervousness nor anxiety , do not stop the treatment suddenly , some drugs increase blood pressure must be carful , Monitoring the blood pressure

- **Herbals provoking hypotension**
- Agrimony الغافس — **celery** الكرفس
- Corn silk — wild carrot الجزر البري
- **Garlic** الثوم — squall البصل
- **Ginger** الزنجبيل — Sage المرمية
- Goldenseal — Pokeroot
- Hawthorn زعرور — **Parsley** بقدونس
- Mistletoe الهدال — Nettle نبات قراص
- **Hibiscus** — **green tea**

النهدي nahdi



- Also other natural or herbal as green tea , hibiscus
- Increase the need to monitoring the B.P
- **Choice of drugs for hypertensive patient**
- The choice between the drugs is to a large degree determined by the characteristics of the patient being prescribed for, the drugs' side-effects, and cost. For example, asthmatics have been reported to have worsening symptoms when using beta blockers. Most drugs have other uses; sometimes the presence of other symptoms can warrant the use of one particular antihypertensive (such as beta blockers in case of tremor and nervousness, and alpha blockers in case of benign prostatic hyperplasia).the others for certain individual patients.






- **Generally the choice** of the therapy of hypertension from the specialist **mostly divided into**
- **Prehypertension** ( 120 – 139 ) lifestyle modification only without drugs
- **Stage 1 hypertension** ( 140-159 ) lifestyle modification & one drug or drug combination
- **Stage 2 hypertension** ( 160 or more ) lifestyle modification & two drugs combination
- The aim of this subject not for prescribing but for counseling & advancing the hypertensive patient

Color of the skin & antihypertensive drugs





- Treatment classifaction
- There are mainly 2 lines for treatment:
- Lifestyle modification
- Drugs which classified into :
- Diuretics help the kidneys to eliminate excess salt and water from the body's tissues and blood.
- Loop diuretics:
  - bumetanide ,, ethacrynic acid
  - furosemide , , torsemide






- Thiazide diuretics:
  - chlortalidone ,, epitizide
  - hydrochlorothiazide and chlorothiazide
  - bendroflumethiazide
- Thiazide-like diuretics:
  - Indapamide (Natrilex , Bipreterax) , metolazone
- Potassium-sparing diuretics:
  - amiloride , triamterene ,, spironolactone






- **Although the above** is a thorough list of diuretic agents, only the thiazide and thiazide-like diuretics have good evidence of **beneficial effects** on important endpoints of hypertension. **But also** the specialist can **prescribe potassium sparing diuretic** or potassium supplemental for the patient






- **Adrenergic receptor antagonists**
- Beta blockers:
  - atenolol , metoprolol , bisoprolol , ( nebivolol in nebilet ), nadolol , oxprenolol , pindolol ,
  - propranolol,, timolol ( non specific beta b locker )
  - Other drugs decrease HR is **Ivabradine (Procoralan 5, 7.5 )**
- Mixed Alpha + Beta blockers:
  - bucindolol , **carvedilol** , **labetalol**
- Alpha blockers:
  - **doxazosin** , phentolamine , , phenoxybenzamine
  - **prazosin** , **terazosin** , tolazoline






- Alpha-2 agonists :
  - Clonidine (catapress ) , **Methyldopa ( Aldomet )**
- Although beta blockers lower blood pressure, they do not have as positive a benefit on endpoints as some other antihypertensive. In particular, atenolol seems to be less useful in hypertension than several other agents. However, beta blockers have an important role in the prevention of heart attack in people who have already had a heart attack.






- **Centrally acting adrenergic drugs**
- Central alpha agonists lower blood pressure by stimulating alpha-receptors in the brain which open peripheral arteries easing blood flow. Central alpha agonists, like Clonidine, are usually prescribed **when all other anti-hypertensive medications have failed.**
- Clonidine , Guanabenz , Methyldopa






- Despite lowering blood pressure, alpha blockers have significantly poorer endpoint outcomes than other antihypertensive, and are no longer recommended **as a first-line choice in the treatment of hypertension**. However, they may be useful for some men with symptoms of prostate disease.






- **Calcium channel blocker**
- dihydropyridines: ( vasoselective ) تحتاج بحث
  - amlodipine , felodipine , isradipine , nifedipine , nimodipine nitrendipine
- non-dihydropyridines: (Cardioselective ) تحتاج بحث
  - diltiazem
  - verapamil
  - With beta blocker may be problem تحتاج لبحث






- **ACE inhibitors**
- ACE inhibitors inhibit the activity of Angiotensin-converting enzyme (ACE), an enzyme responsible for the conversion of angiotensin I into angiotensin II, a potent vasoconstrictor.
- captopril, enalapril , fosinopril , lisinopril perindopril , Imadipril ( Tanatril )
- Quinapril ( aqutel ), ramipril (tritace ) , trandopril , benzapril





- Renin Angiotensin System ( RAS ) regulate blood pressure & fluid balance in the body where when blood volume & or sodium levels in the body are low or blood potassium is high the cell in the kidney release renin then renin converts angiotensinogen which is produced in the liver & give angiotensin I which by ACE ( which found in the lung ) give angiotensin II which is potent vasoconstrictor ( blood vessels constriction )

- Also angiotensin II stimulate the release of aldosterone H. in the adrenal gland , aldosterone H. cause the renal tubules to retain sodium & water but excrete the potassium
- Together angiotensin II & aldosterone work to raise the blood pressure & blood volume
- Also if renin angiotensin system become over active lead to high blood pressure






- **Angiotensin II receptor antagonists**
- Angiotensin II receptor antagonists work by antagonizing the activation of angiotensin receptors.
- candesartan , eprosartan , irbesartan (aprovel , arena) , losartan
- olmesartan , telmisartan , valsartan(diovan , tabuvan )






- **Vasodilators in pharmacy only nitrate group**
- Vasodilators act directly on arteries to relax their walls so blood can move more easily through them; they are only used in medical emergencies.
- sodium nitroprusside
- **Adrenergic neuron blockers**
- Guanethidine , Reserpine






## Heart failure drugs :

- Renin- angiotensin system blocker drugs **( ACEI , ARB'S )**
- Beta blocker drugs ( atenolol , bisabrolol , metaprolol , Carvidilol للبحث )
- Diuretics ( Loop diuretic , thiazide , aldosterone antagonist , )
- Direct vasodilator drugs as isorbid
- Inotropic agent as digoxin , dig toxin






- **Antiarrhythmic drugs :**
- Na blocker as lidocaine
- K blocker Amiodarone as cordaron , sedacron
- Ca channel blocker
- Other drugs as Adenosine
- **Anti angina drugs ;**
- Nitrate drugs ( isosorbide as dinitrate,nitroglycerine )
- beta blocker
- Ca channel blocker






**Hypotensive drugs :**

- Gutron ( midodrine )
- Effortil ( Etilefrine )
- Heptamyl ( Heptaminol Hcl )
- **Antiplatlets aggregation :**
- ASA
- Clopidogril ( Plavix )
- Direct thrombin inhibitor ( dapigatron = paradoxa )
- Herbal & natural






**Hemostatic drugs** :

Konakion (phytomenadion ) , dicynon (etamsylate ), methergine ( ergometrine ) ,

**Intensify blood vessel ( vein tonic drugs )**

Daflon , horsechustnut , venoruton , anastex , vit C , …






## Triglycerid & Hypercholestorimia drugs

- **Fibrate group : as fenofibrate ( phenogel ,lipanthyl )**

, etofibrate ( lipomerz ) , Gimfibrazole ( loopid ,lowlip )

- **Lipase inhibitor drugs :** inhibit the absorption of fat as Orilestate , ....
- **Prevention of cholesterol from the intestine :** as ezetimbe ( Ezetrol )
- **Complex with cholesterol & bile salt : as** cholestramine in sequestran , ....
- **MG CoA reductase inhibitor drugs ( Statin ) drugs as**






# Triglycerid & Hypercholestorimia drugs

- **MG CoA reductase inhibitor drugs ( Statin ) drugs :** as following
- Simvastatin (Zocor )
- Atorvastatin ( Lipitor )
- Fluvastatin ( Lescol )
- Pravastatin ( lipostate )
- Rosuvastatin ( Crestor , Ivarin )
- Combination ( Ingy & caduet )
- S. E
- Patient education & cross sales






# Triglycerid & Hypercholestorimia drugs

- What is the cholesterol : waxy material associated with fatty food
- Measures : LDL 0.... Less than 100 mg/dl

  Triglyceride less than 150 mg/ dl

  HDL high than 50 mg/ dl

  Total cholesterol ( LDL + HDL + VLDL ) less than 200 mg/dl
- **Symptoms of high** cholesterol : no symptoms but by time lead to build up of plaque inside the arteries , atherosclerosis , .......
- Source of cholesterol :
- Synthesis of cholesterol 80 % in liver



- But about 20% of cholesterol from food

**Function of cholesterol** :

Enter of synthesis of all cells , sexual hormones synthes.

Important role in food metabolism , digestion of fat

- **Patient education as add value** & cross sales
- Food help as oats, Figs , kale , prokle , olive oil , sunfl
- Cholesterol limit / day 300mg for healthy person
- Food rich by cholesterol : egg , liver , butter , whole milk , & whole milk products , brain , caviar , cakes , fatty red meat , croissant , sea food القشريات



## Drugs for vascular insufficiency

A)**Psych stimulant & Nootropics** : drugs protect cerebralcortics from **hypoxia** ,increase cerebral circulation & **utilization of oxygen** in cerebral cortex as piracetam ( nootropil ) , Vinpoctine (cavinton ) , pyritinol( encephabol )

B) **Peripheral vasodilator & brain blood vessels** vasodilator as **pantoxyphyline** ( trental ) , Gincobiloba , tabonina , phosphorus containing products , **codergocrine** ( hydergine ) , nicergoline (sermion ) , isoxsuprine ( duvadilan ) , phentolamine (vosamax ) , papaverine (vasorin )

C) **Herbal supplementation** as gincobiloba , ginsing , arcalion ,

D) **Other vasodilator** (general )

**Piribedit** ( trivistal ) non ergot dopamine agonist increase the blood supply ischemic tissue & also used for parkinson , vincamine ( Oxybral ) , trimetzidine ,

E ) **drugs for inner ear circulatory disturbance anti vertigo** drugs as betahistine ( betaserc ) analogue for histamine , to improve microcirculation of inner ear , also decrease end lymphatic pressure

F) **Peripherally & brain circulation** as cinnarazine

## Hormones

- Use of oral contraceptive & other hormones & hormones antagonist
- Oral contraceptive prescribe from specialist but we have important role in **counseling & advice**
- **Starting The Pill**:
- There are several ways to begin taking The Pill. One common way is to **start on the first day of the period** when the women use oral contraceptive first time or the first day after an abortion
- but women used pills before can be start after 7day from last box






- always remembers  when occur  any disturbance in taking the pills must advice using of  other methods of control as condom , local spermicidal tab.
- **Continuing**:

Take one pill every day until you finish an entire pack. Try to link taking The Pill with a regular activity that you do at the same time every day, like eating a meal or brushing your teeth. If you have a 28or more -day pack, start a new pack immediately after you finish the old one. If you have a 21-day pack, take one pill every day for 21 days, no pills for 7 days, then start the new pack immediately.






- **Cautions**

Women who are over 35 and smoke or who have any of the following conditions should not take The Pill:

- History of heart attack or stroke
- Blood clots
- Unexplained vaginal bleeding
- Known or suspected cancer
- Known or suspected pregnancy
- Liver disease

Women who are under 35 and smoke, have migraines,






& gallbladder disease, hypertension, diabetes, epilepsy, sickle cell disease, elective surgery, a history of blood clots, liver or heart disease may not be able to take The Pill. Your clinician or doctor  where women who use The Pill have a higher risk of heart attack and stroke.

**Side Effects & Disadvantages**

- As the body adjusts to hormonal changes created by The Pill, women often experience some minor side effects, including:
- Irregular bleeding or spotting
- Nausea
- Breast tenderness






## Hormones

- Weight gain and/or water retention
- Spotty darkening of the skin
- Mood changes
- Does not protect against sexually transmitted infections, including HIV/AIDS.
- Must be taken every day.
- Less effective when taken with some drugs.
- Raised risk of heart attack and stroke.
- Side effects usually **disappear after 2-3 cycles**. If the side effects still after 2-3 cycles or if heavy bleeding occurs, referred to specialist






## Hormones

- **Advantages**
- Periods may be lighter or more regular.
- Easy to use.
- Does not harm future fertility.
- May protect against uterine and ovarian cancers.
- **Has other use** as development of secondary character of women , to regulate the period ,
- May reduce acne.
- Can be used for Emergency Contraception.






- **Future Fertility**
- Women who want to become pregnant may stop using The Pill at any time. Fertility may return immediately or after a few months ( 6 – 9 )
- **Drug Interactions**
- The effectiveness of the Pill is lowered when taken with certain medications, including **antibiotics, anti-seizure, tuberculosis, and migraine medications**. If you are taking any medications, must use other method , like condoms and spermicidal. As with all drugs,






- **Danger Signs**
- Women who experience any of the following symptoms while taking The Pill should call the clinic immediately:
- **A**bdominal pains (severe)
- **C**hest pain or shortness of breath
- **H**eadaches (severe)
- **E**ye problems, such as blurred vision
- **S**evere leg or arm pain or numbness
- **Missed Pills: Late Start**
- The most common way women get pregnant while using The Pill due to **starting late**.






# Hormones

- 1 day late starting the next package: Take 2 pills as soon as you remember and one pill each day after. Use a backup form of birth control as condom for two weeks.
- 2 days late starting the next package: Take 2 pills per day for 2 days, then continue as usual. Use a backup form of birth control for two weeks.
- **Missed Pills: During the Cycle**
- 1 pill missed: Take it as soon as you remember and take your next pill at your usual time. This may mean taking two pills in one day. & if missing in 1st week must use other method as condom but in the 2nd week use the pills only but in 3rd week stop & begin after 7 day new box






# Hormones

- 2 pills missed in a row in the first two weeks: Take two pills on the day you remember and two pills the next day. Finish the rest of the pack as usual. Use other method as condom for one week at least.
- 2 pills missed in a row in the third week: stop & begin after 7 day new box but must be test the pregnancy if there is no period
- **Other method for missed pills**
- If forget less than 12 hour will take the tab. only
- If forget for 24 hour take the tab. & use other method as condom
- If forget for 48 hour must be stop 7 day & begin new cycle with new box

# Hormones

- One type hormone of oral contraceptive  must be taken after birth or  30 day after birth  & not stop  at all, if forget this type for 1hour must use other method for 2 week at least
- If occur vomiting or diarrhea depend on the number of hours from taking of pills
- **Missed Periods**
- Missing a period does not always mean that women is pregnant but mostly occur due to :
- in the first few months of Pill use
- if you missed taking any Pills
- if you are taking another medication (especially antibiotics)
- if you have been sick (vomiting and/or diarrhea)






## Hormones

- If women forgot one or more pills and do not have a period that month, we recommend that she must be done pregnancy test , Pregnancy tests are recommended right away. If she become pregnant while on The Pill, there is probably no risk of birth defects.
- **Types of contraceptive available now :**
  - Oral contraceptive & injection
  - Loops different type used by specialist
  - Local spermicidal used locally before sexual intercourse
  - Patches used once weekly






## Hormones

- **Sales points dyrogestrone** (duphoston ) are the following :
- Similar molecular structure & pharmacological effect of **endogenous progesterone**
- No interaction with estrogen products therefore can be taken with estrogen containing products in postmenopausal women
- It is orally active by lower dose
- It is not harmful for pregnant but must be recommended also by physician & **No effect on genital tract of female fetus**
- It is free from **estrogenic , androgenic ,anabolic** & **corticosteroids effect of other steroids** or at least it is the less one






## Hormones

- It change the **proliferative phase (growing phase ) to secretory** phase therefore control endometriosis & also help in producing protein needs to maintain the pregnancy
- Dose single or multiple not effect on pharmacokinetics & steady conc. After 3 day
- Therefore can be take once or twice/ day
- **Different indication** : Hormonal replacement therapy with estrogen to decrease the side effect of estrogen
- , threatened abortion , dysfunctional uterine bleeding , premenstrual syndrome (PMS) , reestablish regular menstrual cycle by help restore natural hormone ,
- ,






- , missed periods by use & stop , inhibit periods by continuous use till finished
- **Common S. E** : may be **somnolence** or dizziness after oral administration by **some hour , migraine , headache** , nausea
- **According to company trials in Saudi Arabia للمراجعة والبحث**
- Recommended dose for missed period 1*3 for 5 – 7 days
- Recommended dose for delaying the period before menstruation by more than 4 days & 2 tab. Morning , 2 tab. Evening






- **Vitamin A** ( Retinol animal or chemical source , B- carotene or pro-vit . A plant source )
- **Natural source** Carrots specially yellow , dark green leaf , liver , egg yolk , fish,
- Antagonist with alcohol where it impair liver storage , products inhibit fat absorption
- Deficiency . Night blindness
- **Indication** . Vision , prevent xerophthalmia growth , antioxidant ,



- **Recommended dietary allowance** ; adult men 500 I.U , women 400 I.U , Preg. & lactation 400 I.U
- Tretinion & Isotretinion derivatives other application & other use
- **Vitamin D :** Plant origin Ergocalciferol D2 , animal origin chole calciferol D3 , also D3 synthesized in the skin by ultraviolet
- **Natural source** : sun exposure , fish , liver , oils , mushroom

- egg , milk , fruit , no vit. D تحتاج للبحث
- Synergistic effect thiazide diuretic , also oral contraceptive increase calcitriol blood level
- Antagonist : cholestramine , mineral oil , laxative , inhibit the absorption of vit. D , also corticosteroid , anticonvulsant & alcohol reduce the response for vit. D تحتاج لبحث
- Defeciency : bone weakness muscle weakness , tetany ,






- **Indication** : essential for mineral homeostasis , promotes bone formation by maintaining the Ca & ph concentration & skeleton building , immune booster effect , anti tumor , also muscle , nerve , blood clotting , تحتاج بحث
- **Recommended dietary allowance adult** 200 IU , infant less than 6 month 300 IU , but infant more than 6 month 400 IU






- **N.B remember** that the treatment of rickets the dose 1000 IU of D2 or D3 / day for 10 day or more also remember that **1ug = 40 IU**






uses of vitamin D3 deficiency

Lack of direct exposure to sun light

Uses of sun screen

Genetic factors mainly among Asian people

Fast foods and eating habits (lack of vitamin D3 rich foods).

cidence of vitamin D3 deficiency in Gulf area

any studies suggest about 90% of Saudi people suffer from vitamin D3 deficiency

tamin D3 deficiency up to 54% among pregnant women

seases caused by vitamin D3 deficiency

- Rickets
- Osteoporosis and ostoeomalacia
- Diabetes type 2
- Obesity

mptoms of vitamin D3 deficiency

Muscle pain

General weakness

Fatigue

- Hypertension
- Obesity
- Joint pain

Diagnosis

- Measuring vitamin D3 blood level.
- Normal level 30-70 Nano gram per
- Below 30 considered deficiency should be treated






- **Vitamin E :** Alpha tocopherol
- Natural source : vegetable oil as peanut , soya , palm, & corn oil , also wheat germ oil
- Synergistic : antioxidant as vit.A , C , selenium all these protect the vit. E action
- Antagonist : iron reduce the availability of vit. E , polyunsaturated fatty acid in diet more vit E is required تحتاج لبحث
- **Indication**: Antioxidant , haemolytic anemia



- Also has effect in treatment of intermittent claudication , **prophylactic in cardiovascular** problem , lowering the risk of cancer & cataract , immune function , neuromuscular disorder , spermatogenesis & infertility تحتاج بحث
- Deficiency : children & pigment associated with sickle cell disease (thalassemia ) I.E predisposing factor






- **Recommended dietary allowance** : adult 10 mg ( 15 IU ) / day, pregnant 30IU تحتاج لبحث
- **Vitamin K** : K1 Phytominadion plant , K2 menaquinone intestinal flora , K3 menadione which change to K2 in the intestine
- **Natural source** : Potato , tomato , green leafy veg. soybean, green tea , egg yolk ,butter , chees ,
- Antagonist : anticoagulant , antibiotic , intestinal illness & mineral oil



- Deficiency : is un expected
- **Indication** : it is clotting factor need for blood clotting where it is necessary for **prothrombine** , VII , IX, X factor action , , also K1 used in bleeding expected operations , also in hypoprothrombinemia , before delivery ,
- **All last vit. is fat soluable vitamins**






- **Vitamin C** : Ascorbic acid
- **Natural source** : citrus fruits , strawberry , parsely , califlower ,
- Synergistic : anti oxidant vit. A, E , protect vit. C,
- Antagonist : industrial toxins , air pollution , tobacco smoke , also antidepressant & diuretic increase vit. C requirement






- **Indication** : has role as cement substance in vascular tissue , muscle , bone & cartilage , treatment fatigue , loss appetite , immune function, folic acid metabolisms, scurvy ,
- Required for production of collagen , promote skin repair & healing ,
- **Recommended dietary allowance** : adult 60 to 100 mg /day but preg. Increase by 30% & lactating increase by 60%






- **Vitamin B1** : thiamine , ant beriberi ,
- Dried brewer yeast , meat , grains , bran
- Synergist : B3 , B5 , B6 , B12
- Antagonist : Coffee , tea , raw fish , increase nausea , diarrhea , urine excretion decrease it
- Deficiency : fatigue , lack of conc. تحتاج للبحث
- **Indication** : it is essential for carbohydrate metabolism , through coenzyme function






## Vitamins

- Also in beriberi , Neuritis, 100 mg / day
- **Recommended dietary allowance** : adult 1.2 to 1.5 mg / day but preg. 1.6 mg /day , infant 0.3 mg , child 0.7 to 1.0 mg
- **Vitamin B2** : riboflavin
- **Natural source** : yeast , liver , milk , meat , egg
- Synergistic thyroxin , anticholinergic increase the its absorption



- Antagonists : theophylline , penicillin , chlorpromazine replace B2 from protein
- Deficiency rare not expected
- **Indication** : necessary for conversion of FA & B6 into coenzyme form , can be used for treat corneal ulcer , photophobia , non infective conjunctivitis as treatment 5- 10 mg / day
- **Recommended dietary allowance** : adult 1 to 2 mg /day preg. 0.3 mg , infant & child 0.4mg






- **Vitamin B3 or niacin** : nicotinamide , niacinamide , last names vit. B3 , B4 , P.P
- **Natural source** : yeast , liver , meat ,milk , egg , tryptophaneis niacin containing product ,
- Synergistic : copper convert tryptophane to niacin
- Antagonist : copper deficiency , peniciallamine rifampicin & isoniazide ihibit absorption of B3 , also vit.B6 def. where it is necessary for niacin formation ,

- **Indication** is essential for growth hormones formation , **high doses of nicotinic acid** reduce **cholesterol** ( 1gm *3*1 month ) تحتاج لبحث

, **vasodilator** (100mg/day ) also treatment of **pellagra** (disease caused by deficiency of niacin & protein in the diet the main symptoms are skin eruption as rash, itching, scales (**dermatitis**) ,**digestive disturbance diarrhea** , cirrhosis , also **CNS disturbance as mental disorder & insomnia**






- **Vitamin B6** : Pyridoxine
- **Natural source** : chicken , liver of beef , fish (tuna & salmon )
- Synergistic : other type of vit. B complex as B2, B3 , biotin
- Antagonist : Isoniazide , cycloserine , penicillamine , desoxypyridoxine , also B6 can counteract the effect of L.dopa in parkinsonism






- **Indication** & role : production of epinephrine , serotonin 5H2 , act as coenzyme …. Formation of nicotinic acid , amino acid metabolism , glycogen breakdown , but therapeutically in **certain type of anemia , treatment of nausea & vomiting in pregnancy ( 40 mg / day ), improve glucose tolerance** in DM, also with other vit. B in neuritis , **decrease the asthmatic attack no**. also used in amino acid metabolism abnormalities , ( 40 – 200mg/day),






- **Recommended dietary allowance** : adult 2mg/day ,
- **Vitamin B12** :cyanocobolamine , ant pernicious anemia factor
- **Natural source** : animal products (liver , kidney , heart , brain ), fish , egg , dairy products , but plants free from vit B12
- Antagonist : alcohol decrease the absorption , def. of B6 , cholestyramine , colchicin , neomycin

Also neomycin , metformin , anticonvulsant as phenytion , also nitrous oxide

- **Indication** : B12 is essential for formation of Blood cells , nerve sheath ,various protein, fat & **carbohydrate metabolism ,essential for folic acid regeneration , optic neuritis & other neuritis , pernicious anemia , prusside & cyanide induced toxicity**
- Deficiency : Megaloblastic anemia , neuropathy






- Defective DNA synthesis ( numbness ) , spinal cord degeneration , sore tongue
- Recommended dietary allowance : adult 2ug/day , preg. 2 – 2.6ug / day
  but infant 0.3 – 0.5 ug /day
- **Pantothenic acid** : Vit.B5
- **Natural source** : distributed among food , yeast , meat , egg , milk , grain , veg.






B12 help to convert B5 to coenzyme , vit. A , B6 , folic acid , biotin are necessary for B5 utilization ,

- Antagonist : alcohol impair its utilization ,
- **Indication & role** : act as coenzyme in many metabolism , **inter in synthesis of sterols hormones** , **antibodies** , neurotransmitter , therapeutically **enhance the healing as bed sore , burns , sunburn , also other inflamed area**

- **Folic acid** : folacin , vitBc , vit B9 ,
- **Natural sources** : liver , dark green leaf , yeast , wheat germ
- Synergist : vit. B group , vit. C enhance utilization folate
- Antagonist : chemotherapeutic , antimetabolite as methotraxate where inhibit folate metabolism , but oral contraceptive ,alcohol , barbiturate , sulfasalazine , antiacids






- & also cholestyramine , inhibit the absorption of folic acid
- **Indication & role** : act as coenzyme in metabolic reaction , synthesis of nucleic A. blood cell formation , folate deficiency 400-500ug/day , abnormal tissue , for pregnant 5ug/day , also megaloplastic anemia with B12 , for memory B.C
- **Biotin** : vit H , vit B , Coenzyme R ,
- Natural source yeast ,liver , kidney , egg yolk soya bean



- Antagonist : Avidin ( glycoprotein in raw egg white inhibit biotin absorption , also antibiotic damage the intestinal flora & reduce its level
- Deficiency : rare but if occur this lead to anorexia ,nausea , vomiting , alopecia ,
- **Indication & role** : biotin form several enzyme system , & **necessary for normal growth body function** , therapeutically used for **alopecia , in seborrhoic dermatitis, , brittle finger**






- **Recommended dietary allowance** : adult 30 – 100 ug / day but infant & young children 10 – 30 ug / day
- **Remember the following**
- **All vitamins than KEDA are water soluble vitamins ,**
- **Antioxidants are vit. A , C , E , & selenium**






- **Calcium (Ca.)**
- **Natural source** : Milk & dietary products , shell fish , sardines , flour , sesame & almond oil
- **Indication & role** : necessary for the development & maintenance of healthy bones , teeth , …. Has an important role in blood coagulation , Muscle convulsion , heart function تحتاج بحث , & has role in absorption of vit. B12






- **Phosphate (Ph)** :
- **Natural source** : Chees , egg yolk , meat , chicken , vegetable ,
- **Indication & role** : one of the most essential minerals for the body with calcium contribute development of healthy bones , teeth ,& production of energy of energy from food
- **Selenium (Se)** : Onion , Meat, milk ,vegetables
- **Indication & role** : **anti oxidant together with**




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**Vitamin E**. protect the cells from damage caused by oxidation , it activate the cancer inactivating genes there fore it has role in **decreasing the rate of prostate , lung , colon & rectum**

- **Zinc (zn)** :
- **Natural source** : liver , shellfish , fish products , vegetables , milk , meat , egg , corn ,
- **Indication & role** : essential trace element for enzyme reaction , good use of protein for growth






& for healthy reproduction , immunization

- **Chromium (Cr)** : sunflower oil , egg yolk , cheese ,, meat yeast , grains
- **Indication & role** : necessary for the metabolism of sugar, its lack may be predisposing for the appearance of diabetes & cardiovascular disease in old age
- **Iodine (I2)** :
- **Natural source** : fish products , diary products , salt



- **Indication & role** : necessary for function of thyroid , help in regulation of body fluid
- **Magnesium** :
- **Natural source** : whole meal grain , yeast , bran dried fruit , banana , green vegetable , chocolate
- **Indication & role** : it help the good functioning of muscle tissue & skeleton growth






- **Manganese** :
- *Natural source* : whole meal grain , yeast , bran dried fruit , banana , green vegetable ,
- **Indication & role** : it essential for growth of bones , nervous system , hearing system , also in its deficiency during pregnancy affect the foetus
- **Copper (Cu )** :
- **Natural source** : Mushroom , liver , shellfish



& fish products , nuts , fruits

**Indication & role** : essential for metabolism of iron , the functioning of enzyme , & melanin production , help to keep blood pressure normal

- **Potassium ( K )** :
- Vegetables & fruits specially banana & Kiwi






- Gingko ( Ginkobiloba ) treatment of cerebral circulatory disturbance , decrease the vertigo , tinnitus , weak memory , also peripheral arterial circulatory disturbance as intermittent claudication , ginko contain flavonoids , provides antioxidants , reduce the capillary fragility , increase the threshold of blood loss from capillary , it antagonize platelets activating factor
-






- **Gincobiloba**
- Also contain bilobalide protect the nerve cell
- Therefore application cerebral insufficiency , increase the memory & concentration , decrease the performance depression anxiety , dizziness , tinnitus , headache , intermittent claudication, Alzheimer's , dementia,
- Recommended dose 40mg 3 time daily , with meal 4 – 6 week stander ( 6% terpene +24% flavon )






- S.E Gastric upset , not increase the dose
- Drug interaction : anticoagulant , antiplatelet, may lead to bleeding specially iris bleeding ( hyphema ) , Aspirin , warfarin , …
- **Sawpalmetto** ( Serenoa – repens )
- Treatment of micturition difficulties , associated with BHP






- Mech.1- Inhibit dihydrotestosterone to androgen receptors in prostate hyperplasia

  2- also it inhibit testosterone 5- alpha reductase

Dosage 1- 2 gm. Twice or 160 mg of ing. Twice






## Vitamin & disease as sales

- Diabetic patient : B1, B6, B12 but also chromium & ginseng as tonic
- Hypertensive : multivitamins but not use ginseng & chromium specially in un controlled hypertensive
- Circulatory disturbance :ginkobilba , ginseng ,phospholipids
- Liver dysfunction : vitamin free from iron but rich by lipotropic factor ( V2 plus )






& other liver support as sylmarine & hepamerz

- Pregnant : 1st trimester folic acid ,pyridoxine B6 , multivitamins must be free from ginseng also vitamin A by low conc. or Beta carotene , also iron preferable to be free where it increase the symptoms (nausea ,constipation ) but not C.I where may be necessary
  2nd 3rd trimester multivitamins , iron , but ca. is necessary ولكن يحتاج لبحث طريقة إعطائة






- Epilepsy : vitamin E where decrease the No. of seizure
- Alzheimer : Acetyl L. carnitine , taurin , as in exotique ,
- Neonates with skin & hair problem can advice by multivitamins containing biotin as royal jelly , junior ,.......
- Anemic patient : iron , folic A. , B12 , Protein
- Slimming : need to mulivit. & iron ,chromium,




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# Vitamin & disease as sales

- Prostatic patient : vit. E , & wheat germ oil,
- Hyperlipidemia : supplemental containing garlic , parsley, …..
- Dry skin & lips , vit. A , E , B , co enzyme Q10 ,
- Eye problem : vit. A , vision nature ,
- Hair & nail as Zinc , Biotin , as hairdal , silica ok , bioyeast
- Heart problem co enzyme Q10 , folic A , acetyl






## Vitamin & disease as sales

, Acetyl L. carnitine , folic acid , adenoplex ,…

- Cold symptoms : Vit. C. , Echinace , as phytocold , zinc
- Digestive Problem & diarrhea : vit. B , probiotic as bion 3 , protexin , kalsis , becombion , ginger ,….
- Decrease the weight problem : multivit , …
- Bleeding of gum & hemorrhoids :  vit. C . , rutin , horse chestnut ,  daflon , anstex




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Also zinc & panthenol has role in gum bleeding , & hemorrhoids

- Hyperuricemia : تحتاج لبحث
- Total body function need body detoxication as antioxidant (A,E, C , selenium ) garlic , parsely
- Cancer patient : Antioxidants
- Age related disorder : anti oxidants , acetyl L. carnitine






- البحث والتطوير والأضافة






# Thank you



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